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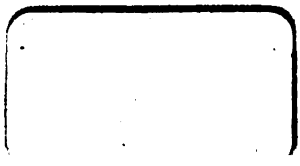

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TRANSACTIONS

OF THE

MEDICAL SOCIETY

BOSTON MEDICAL LIBRARY ASSN. OF THE
JUN 28 1889

STATE OF NEW YORK,

FOR THE YEAR 1889.

PUBLISHED BY THE SOCIETY.
1889.

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CONTENTS.

PAGE

Organization 1
Officers and Committees 5
Members in Attendance at the Annual Meeting of 1889 . . . 7
Minutes of the Proceedings 11
Inaugural Address 11
Reports:
1. Treasurer's Report 39
2. Report of the Merritt H. Cash Prize Fund 41
3. Report of the Committee of Publication 41
4. Report of the Special Committee on Quarantine Control . . 42
The Anniversary Address 44
Communications:
I. The Etiology of Croupous Pneumonia. By George M. Sternberg, M.D. 53
II. Views on the Prevention and Treatment of Typhoid Fever. By Stephen Smith Burt, M.D. . . 80
III. Diseases of the Circulatory System occurring in connection with Typhoid Fever. By Eugene Beach, M.D. 87
IV. The Treatment of Typhoid Fever. By Simon Baruch, M.D. 90
V. The Municipal Control of Diphtheria. By Charles Stover, M.D. 103
VI. Basedow's Disease. By H. R. Hopkins, M.D. . 106
VII. Hernia of the Pleura into the Neck. By George R. Fowler, M.D. 112
VIII. The Prevention of Summer Diarrhœa among Infants, viewed in the Light of the Lesions. By L. Emmett Holt, M.D. 115
IX. Diabetic Amblyopia. By William O. Moore, M.D. 120
X. Acoustics of the Human Chest in Physical Diagnosis. By James R. Leaming, M.D. . . . 126
XI. The Technique of Vaginal Hysterectomy. By James B. Hunter, M.D. 139
XII. Galvanism in Gynecology. By Willis E. Ford, M.D. 148
XIII. The Disorders of Menstruation. By Andrew F. Currier, M.D. 154

Digitized by Google

PAGE

Communications:

XIV. Rules for the Management of Cardiac Dilatation, based on its Etiology. By Alfred L. Loomis, M.D., LL.D. 171

XV. A Clinical Study of Alopecia Areata and its Treatment. By L. Duncan Bulkley, A.M., M.D. . . 184

XVI. Inebriety from a Medical Point of View. By T. D. Crothers, M.D. 193

XVII. On Chronic Headaches of Functional Origin. By Charles M. Dana, M.D. 197

XVIII. A Contribution to the Surgery of the Spinal Cord. By Robert Abbe, M.D. 204

XIX. A Contribution to the Surgery of Cerebral Tumors. By Lewis S. Pilcher, M.D. 214

XX. Inferior Dental Neurectomy. By J. H. Glass, M.D. 220

XXI. The Efficacy of the Older Methods of Treating Nasal Disease Contrasted with those of To-day. By Clarence C. Rice, M.D. 222

XXII. Membranous Rhinitis. By Frank H. Potter, M.D. 229

XXIII. Treatment of Hypertrophies at the Base of the Tongue. By Wendell C. Phillips, M.D. . . 234

XXIV. The Treatment of Acute Inflammation of the Middle Ear. By Gorham Bacon, M.D. 237

XXV. The Operative Treatment of a Case of Hyperostoses of the External Auditory Canal. By Thomas R. Pooley, M.D. 241

XXVI. Considerations concerning Extraction of Hard Cataract; with an analysis of 309 Cases. By Henry D. Noyes, M.D. 249

XXVII. The Purulent Conjunctivitis of Infants, and Blindness in New York State. By Lucien Howe, M.D. 260

XXVIII. Excision of the Joints of Both Elbows. By J. P. Creveling, M.D. 266

XXIX. The Orthopedic Treatment of Tubercular Disease of the Knee in Children. By V. P. Gibney, M.D. . 267

XXX. A Brief Consideration of the Present Surgical Treatment of Non-strangulated Hernia. By W. B. De Garmo, M.D. 276

XXXI. On the Treatment of the So-called Perityphlitic Abscess. By Robert F. Weir, M.D. 283

XXXII. Kocher's Method of Reducing Subcoracoid Dislocations of the Humerus. By C. A. Powers, M.D. . 302

XXXIII. The Management of Hip-joint Disease from an Anatomico-pathological Basis. By A. M. Phelps, M.D. 310

XXXIV. Cranial Measurements in Twenty Cases of Infantile Cerebral Hemiplegia. By Frederick Peterson, M.D., and E. D. Fisher, M.D. 324

Digitized by Google

PAGE

Communications:
XXXV. A Case of Triple Cast of the Larynx and Trachea down to the Bifurcation, with Intubation and Recovery. By William Hailes, M.D. . . . 338
XXXVI. The Limitations of the Influence of the Mind upon the Body. By J. Leonard Corning, M.A., M.D. . 340
Reports of Committees:
XXXVII. Report of the Committee on Hygiene . . . 350
XXXVIII. Report of the Committee on the Causes and Prevention of Blindness 354
In Memoriam 364
Obituaries:
I. Memoir of Frederick Hyde, M.D. By W. C. Wey, M.D. . 365
II. Biographical Sketch of Harvey Jewett, M.D. By William C. Wey, M.D. 374
Officers of the Society from its Organization to the Present Time . . 381
Officers, 1889 383
Members:
I. Delegates from County Medical Societies, etc. . . . 383
II. Permanent Members 385
III. Non-resident Members 390
IV. Retired Permanent Members 390
V. Honorary Members 391
Persons Eligible to Membership:
I. Eligible to Permanent Membership 392
II. Eligible to Honorary Membership 394
Physicians on whom the Honorary Degree of Doctor of Medicine has been Conferred 394
I. Deceased Permanent Members 396
II. Deceased Honorary Members 403
III. Deceased Honorary Doctors of Medicine 405
County Medical Societies 409
Appendix 487

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MEDICAL SOCIETY

OF

THE STATE OF NEW YORK.

ORGANIZATION.

By an act of the Legislature passed April 4, 1806, and subsequently amended, the Medical Society of the State of New York is organized as follows:

The Society is composed of delegates, permanent members, and honorary members.

I. Delegates.

Delegates are sent by county medical societies, certain medical colleges, and by the New York Academy of Medicine. Each county medical society is entitled to as many delegates as there are Assembly districts in said county. Each incorporated medical college, which, by its charter, may be represented in this Society, is entitled to one delegate, and the New York Academy of Medicine to five delegates.

Delegates from county medical societies are elected by ballot at annual meetings of the societies. The term for which they are elected is three years,[1] and, as nearly as possible, one-third of the whole number is annually elected.

The credentials of all delegates must be duly authenticated by the seal of the organization which they represent, and the signature of its Secretary.

The organizations entitled to representation in this Society are required by its by-laws to pay to the Treasurer, for the use of the Society, five dollars annually, for each delegate they are entitled to send; and no delegate is permitted to inscribe his name in the register, at the annual meeting, until the dues against the organization he represents have been paid.

[1] See Transactions, 1887, page xxxiii.

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The following table exhibits the classification of counties and colleges, as respects the election of delegates, and shows the number of delegates to which each is entitled, and when the present delegations become vacant:

Vacant Feb. 1, 1890.		Vacant Feb. 1, 1891.		Vacant Feb. 1, 1892.	
Livingston,	1	Albany,	4	Allegany,	1
Monroe,	3	Cattaraugus,	2	Broome,	1
Montgomery,	1	Cayuga,	2	Chenango,	1
New York,	24	Chautauqua,	2	Clinton,	1
Onondaga,	3	Chemung,	1	Columbia,	1
Orange,	2	Dutchess,	2	Cortland,	1
Oswego,	2	Essex,	1	Delaware,	1
Rensselaer,	3	Fulton,	1	Erie,	5
Schuyler,	1	Greene,	1	Franklin,	1
Seneca,	1	Jefferson,	2	Genesee,	1
Wyoming,	1	Lewis,	1	Herkimer,	1
Yates,	1	Niagara,	2	Kings,	12
College of Physicians and Surgeons, New York,	1	Oneida,	3	Madison,	1
		Ontario,	1	St. Lawrence,	3
		Orleans,	1	Suffolk,	1
Long Island College Hospital,	1	Otsego,	2	Ulster,	3
		Putnam,	1	Washington,	2
Niagara University, Medical Department,	1	Queens,	2	Wayne,	2
		Richmond,	1	Westchester,	3
		Rockland,	1	University of City of N. Y., Medical Department,	1
		Saratoga,	2		
		Schenectady,	1		
N. Y. Post-Graduate Medical School and Hospital,	1	Schoharie,	1	N. Y. Academy of Medicine,	5
		Steuben,	2		
		Sullivan,	1	Bellevue Hospital Medical College,	1
		Tioga,	1		
		Tompkins,	1		
		Warren,	1		
		Medical Depart. of Union University,	1		
		Medical Depart. of Univ. of Buffalo,	1		
		College of Medicine, Syracuse Univ.,	1		
		New York Polyclinic,	1		
Total,	47	Total,	47	Total,	49

II. Permanent Members.

Permanent members are elected at the annual meetings of this Society. The names of delegates from county medical societies, etc., who have attended as such, at least two meetings of this Society, are placed by the Secretary on the List of Persons Eligible to Permanent Membership. Any person on this list, who desires to become a permanent member, must make application by handing in his name to the

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Secretary at an annual meeting of the Society, preferably on the first day. The names thus handed in, the Secretary communicates to the Society. If no objection is made to their reception, the Society proceeds to vote their election. If objections are made to any person, his case is referred to the Committee on Ethics for investigation, and report to the Society, which thereupon takes such action as it sees fit. (See *Transactions* of 1886, page 33.) At the time of their election, permanent members must be residents of the districts which are credited with them, and in good standing as active members of their county societies.

Each permanent member on his election shall pay an initiation fee of five dollars, and also the annual dues of a permanent member for the year in which he was elected. If a permanent member-elect shall not pay his initiation fee within one year after his election, such election shall be void.

Permanent members are required to pay, annually, five dollars to the Treasurer, for the use of this Society, and no permanent member is allowed to inscribe his name in the register, at the meetings of the Society, who has not paid his dues for that year, and all arrearages.

All annual dues are payable at the beginning of the session of the annual meeting of the Society.

Only delegates and permanent members whose names are inscribed in the register are entitled to vote at the meetings of the Society.

III. Honorary Members.

The Governor and Lieutenant-Governor of this State, and the Judges of the higher courts during their term of office, shall be, *ex-officio*, honorary members.

The Society may also, at the annual meeting, elect eminent physicians from other States, or from foreign countries, as honorary members. They must have been nominated at a previous annual meeting, and those elected shall not exceed six in number in any year.

The Society may invite physicians who are present at any meeting to take seats as guests, but no physician of this State shall be so invited, who is not a member of a county medical society, entitled to representation in this Society.

Honorary members and invited guests shall have the privilege of a seat at the meetings, and of presenting papers, and of taking part in discussions, but they shall not vote on any question nor be eligible to any office. Papers presented by them require a special vote by the Society, of reference to the Committee of Publication, in order to appear in the published *Transactions*.

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Meetings.

The annual meetings of the Society shall be held at the Capitol, or some convenient place in the city of Albany, on the first Tuesday in February in each year, and other meetings at such time and place as may be determined by a majority of the Society convened at any legal meeting.

Fifteen members shall constitute a quorum for the transaction of business.

The Society may, at its pleasure, change the time of holding its annual meeting, in accordance with the provisions of Chapter V., Laws of 1876, being an "Act to enable the Medical Society of the State of New York to alter the time of holding its annual meeting."

The Senatorial Districts established in 1836, and the Censorial Districts, are given in the following table. In connection with the name of each county, is placed a figure, to indicate the number of Assembly Districts it contains, according to the apportionment made by the Legislature of 1879.

Southern Censorial District.

First Senatorial District.—Kings, 12; New York, 24; Richmond, 1.

Second Senatorial District.—Dutchess, 2; Queens, 2; Sullivan, 1; Orange, 2; Rockland, 1; Ulster, 3; Putnam, 1; Suffolk, 1; Westchester, 3.

Eastern Censorial District.

Third Senatorial District.—Albany, 4; Greene, 1; Schenectady, 1; Columbia, 1; Rensselaer, 3; Schoharie, 1; Delaware, 1.

Fourth Senatorial District.—Clinton, 1; Herkimer, 1; Saratoga, 2; Essex, 1; Montgomery, 1; Warren, 1; Franklin, 1; St. Lawrence, 3; Washington, 2; Fulton and Hamilton, 1.

Middle Censorial District.

Fifth Senatorial District.—Jefferson, 2; Madison, 1; Oswego, 2; Lewis, 1; Oneida, 3; Otsego, 2.

Sixth Senatorial District.—Allegany, 1; Chenango, 1; Steuben, 2; Broome, 1; Livingston, 1; Tioga, 1; Cattaraugus, 2; Schuyler, 1; Tompkins, 1; Chemung, 1.

Western Censorial District.

Seventh Senatorial District.—Cayuga, 2; Ontario, 1; Wayne, 2; Cortland, 1; Seneca, 1; Yates, 1; Onondaga, 3.

Eighth Senatorial District.—Chautauqua, 2; Monroe, 3; Orleans, 1; Erie, 5; Niagara, 2; Wyoming, 1; Genesee, 1.

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ELECTED FEBRUARY 7, 1889.

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DANIEL LEWIS, New York.

VICE-PRESIDENT.

ALFRED MERCER, Syracuse.

SECRETARY.

FREDERIC C. CURTIS, Albany.

TREASURER.

CHARLES H. PORTER, Albany.

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Eastern District.—JOSEPH LEWI, Albany; THOMPSON BURTON, Fultonville; LE ROY MCLEAN, Troy.

Middle District. — ROBERT FRAZIER, Camden; C. L. STILES, Owego; J. H. GLASS, Utica.

Western District.—H. L. ELSNER, Syracuse; FRANK H. POTTER, Buffalo; B. A. FORDYCE, Union Springs.

College of Medicine, Syracuse University.—I. N. GOFF, Cazenovia.

COMMITTEE OF ARRANGEMENTS.

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COMMITTEE ON BY-LAWS.

A. R. SIMMONS, Utica. F. A. CASTLE, New York.
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MEMBERS IN ATTENDANCE AT THE ANNUAL MEETING OF 1889.

DELEGATES.

Albany County:
C. M. Culver, Albany.
Maurice J. Lewi, Albany.
B. U. Steenberg, Albany.
Medical Dep't, Union University:
Lewis Balch, Albany.
Broome County:
Frederick W. Putnam, Binghamton.
Cattaraugus County:
S. Z. Fisher, Little Valley.
Cayuga County:
Benjamin A. Fordyce, Union Springs.
Amanda S. Hickey, Auburn.
Chemung County:
H. De V. Pratt, Jr., Elmira.
Chenango County:
D. A. Gleason, Oxford.
Clinton County:
D. S. Kellogg, Plattsburgh.
Columbia County:
C. E. Fritts, Hudson.
Dutchess County:
W. J. Conklin, Fishkill.
William G. Stevenson, Poughkeepsie.
Erie County:
Bernard Bartow, Buffalo.
Floyd S. Crego, Buffalo.
Eli H. Long, Buffalo.
Roswell Park, Buffalo.
Albert E. Persons, Buffalo.
Medical Dep't, Niagara University:
Frank H. Potter, Buffalo.
Franklin County:
George H. Oliver, Dickinson Centre.
Fulton County:
Darius S. Orton, Northampton.
Greene County:
Charles P. McCabe, Greenville.
Jefferson County:
H. H. Deane, Watertown.
W. A. Vincent, Three Mile Bay.
Kings County:
Fred. D. T. Bailey, Brooklyn.
Charles N. Cox, Brooklyn.
C. E. De La Vergne, Brooklyn.
George A. Evans, Brooklyn.
Sidney Allan Fox, Brooklyn.
William Maddren, Brooklyn.
L. S. Pilcher, Brooklyn.
Frank E. West, Brooklyn.
Lewis County:
C. E. Douglass, Constableville.
Monroe County:
Archibald Dann, Rochester.
E. H. Howard, Rochester.
M. L. Mallory, Rochester.
Montgomery County:
Charles Stover, Amsterdam.
New York County:
C. E. Bruce, New York.
Stephen Smith Burt, New York.
Andrew F. Currier, New York.
W. B. De Garmo, New York.
O. B. Douglas, New York.
E. D. Fisher, New York.
Graeme M. Hammond, N. Y.
N. J. Hepburn, New York.
L. Emmett Holt, New York.
H. P. Loomis, New York.
Henry T. Peirce, New York.
Wendell C. Phillips, New York.
Clarence C. Rice, New York.

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New York Academy of Medicine:
Simon Baruch, New York.
F. H. Bosworth, New York.
New York Post-Graduate Medical School and Hospital:
Robert Abbe, New York.
Niagara County:
D. H. Murphy, McNall.
Oneida County:
J. H. Glass, Utica.
Herbert G. Jones, Utica.
Onondaga County:
Henry L. Elsner, Syracuse.
Medical Dep't, Syracuse University:
F. W. Marlow, Syracuse.
Orange County:
John T. Howell, Newburgh.
Burke Pillsbury, Middletown.
Otsego County:
O. W. Peck, Oneonta.
Nathan Smith, Richmondville.
Putnam County:
G. W. Murdock, Cold Spring.
Rensselaer County:
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M. Felter, Troy.
Osman F. Kinloch, Troy.
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May R. Owen, Brooklyn.
St. Lawrence County:
S. W. Close, Gouverneur.
Schoharie County:
Charles Dickinson, Seward.
Steuben County:
William B. Brown, Bath.
H. C. May, Corning.
Suffolk County:
B. D. Skinner, Greenport.
Tioga County:
James M. Barrett, Owego.
Tompkins County:
Eugene Baker, Ithaca.
Ulster County:
E. D. Chipman, Saugerties.
C. W. Crispell, Rondout.
Washington County:
S. J. Banker, Fort Edward.
Henry Root, Whitehall.
Westchester County:
P. Collard, Sing Sing.
Yates County:
John M. Malony, Eddytown.
Medical Association of Northern New York:
R. J. Wilding, Malone.

PERMANENT MEMBERS.

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William C. Bailey, Albion
William H. Bailey, Albany
M. J. Baker, Hornellsville
M. L. Bates, Canaan Four Corners
Eugene Beach, Gloversville
Herman Bendell, Albany
J. M. Bigelow, Albany
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Henry Gray, Greenwich
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James Macfie, Fort Covington
Le Roy McLean, Troy
A. Ross Matheson, Brooklyn
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Wm. Manlius Smith, Syracuse
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E. V. Stoddard, Rochester
F. R. Sturgis, New York
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William Taylor, Canaslota
Robert Thomson, Troy
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Willis G. Tucker, Albany
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S. O. Vander Poel, New York
A. Vander Veer, Albany
Theodore C. Wallace, Cambridge
Samuel B. Ward, Albany
David Webster, New York
William C. Wey, Elmira
John T. Wheeler, Chatham
J. W. Whitbeck, Rochester
Charles E. Willard, Catskill
Thomas Wilson, Claverack
C. E. Witbeck, Cohoes

Retired Permanent Members.

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Thompson Burton, Fultonville
H. S. Crandall, Leonardsville

Honorary Members.

Francis Bacon, New Haven, Conn.
D. M. Wilcox, Falls Village, Conn.

Invited Guests.

P. L. Alden, Steuben County
Robert Babcock, Albany
E. P. Bailey, Oneida
Theodore P. Bailey, Albany
J. F. Barker, Albany
C. C. Bartholomew, Ogdensburgh
E. A. Bartlett, Albany
W. W. Betts, Valatie
L. E. Blair, Albany
Henry W. Boorn, Schenevus
F. H. Bosworth, New York
G. A. Bradbury, Lansingburgh
Edmond F. Bronk, Amsterdam
E. B. Bronson, New York
T. O. Burleson, Pultney
L. C. Burton, Pittsfield, Mass.
R. P. Bush, Horseheads
Herbert W. Cardwell, Brooklyn
D. C. Case, Slingerlands
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John L. Cooper, Albany
Joseph D. Craig, Albany
Marion Craig, Rochester
T. D. Crothers, Hartford, Conn.
W. S. Daley, Ogdensburgh
H. Beeckman Delatour, New York
Isaac De Zouche, Gloversville
M. F. Drury, Broadalbin
F. W. Goodall, Bennington, Vt.
Charles E. Hackley, New York
Lorenzo Hale, Albany
C. H. Herrick, Troy
William R. Howard, Rochester
Alexander S. Hunter, New York
James B. Hunter, New York
R. E. Hyde, Beekmantown
C. P. Jennings, Bennington, Vt.
Edwin M. King, Fort Edward
E. E. Larkin, Albany
C. M. Lefler, Gloversville
C. E. Lockwood, New York
James McChesney, Troy
W. G. Macdonald, Albany
M. McHarg, Albany
Thomas H. Manley, New York
A. Marsh, Albany
Charles H. Moore, Albany
T. D. Morrill, Albany
G. S. Munson, Albany
William H. Murray, Albany
T. B. Nichols, Plattsburgh
W. J. Nellis, Albany
George W. Papen, Albany
F. M. Perine, Dansville
William H. Porter, New York
J. R. Powell, Jr., Valatie
W. B. Sabin, West Troy
J. Carl Schmuck, Far Rockaway
William L. Schutter, Albany
John H. Skillicorn, Albany
Mary E. Stark, Rochester
David V. Still, Johnstown
A. Ten Eyck, Defreestville
John Thompson, Albany
Franklin Townsend, Albany
A. B. Townshend, New York
G. L. Ullman, Albany
G. S. Van Allen, Schenectady
N. P. Warner, New Woodstock
Faneuil D. Weisse, New York

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MINUTES OF THE PROCEEDINGS

OF THE

MEDICAL SOCIETY OF THE STATE OF NEW YORK,

AT ITS EIGHTY-THIRD ANNUAL SESSION,

HELD AT

ALBANY, FEBRUARY, 1889.

FIRST DAY.—*Morning Session.*

THE President, Dr. SAMUEL B. WARD, of Albany, called the meeting to order Tuesday, February 5, 1889, at 9.50 A.M., in the Common Council Chamber, City Hall, and the exercises were opened with prayer by the Rev. James H. Ecob, of Albany.

The PRESIDENT then delivered his

INAUGURAL ADDRESS.

GENTLEMEN: I desire, first of all, to thank you for the great honor you have conferred upon me in asking me to preside over your deliberations at this eighty-third annual session of the Medical Society of the State of New York. As I recall the names on the list of my illustrious predecessors, a deep feeling of the great responsibility of the office rests upon me, and it is only possible to promise that no effort of mine shall be lacking to make the meeting an instructive and interesting one, trusting to your leniency to excuse all shortcomings, and relying on your hearty coöperation, without which no one in this position could succeed.

The most important event to the profession in this country during the past year was the meeting of the Congress of American Physicians, at the National Capital, in September last. The sessions of all the various societies and associations were largely attended by representative men from all over the country; the presence of many European guests of world-wide reputation added *éclat* to the occasion; the papers read before the various sections, on the different specialties which have of late years attained such

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important positions in our science and art, were of unusual value and merit; the discussions which followed were maintained with zest; the social element was duly regarded in the dinner to foreign guests, the reception by the President of the United States and his wife, and the general entertainment of the Congress in the building of the new Army Medical Museum. Altogether it is no exaggeration to say that this meeting was the most representative and creditable one of our profession that has ever been held in this country.

It seems but right that your attention should be called to the somewhat novel and very disagreeable position in which two of our professional brethren here in Albany have been placed within the past year, as the result of examining a man whose actions had been such as to raise a doubt concerning his mental soundness. It is a matter of no little importance to us all, for any two of us might easily have found ourselves in the same unpleasant predicament. Examination, cautiously and properly conducted, showed the man to be the subject of the delusion that his wife and daughter were conspiring to poison him—a perfectly unfounded suspicion. The usual papers were made out, signed, and sworn to, and the Recorder had him transferred from the jail to the insane asylum. He brought suit through his attorneys to recover his liberty, and the case came before Judge Learned, of the Supreme Court, who virtually decided that no man could be adjudged insane and sent to an asylum on the certificate of two physicians, in the way usually followed unless he had shown that he was dangerous to himself or others. Before this court and jury the man was adjudged sane, though it was shown that he was laboring under delusions. He then commenced action against the Recorder and the two physicians to recover several thousand dollars damages. The defendants put in a demurrer, on the ground that even if all the facts were as stated there was no cause for action, and the demurrer was sustained by Justice Mayham. Appeal being taken to the General Term, a decision handed down last December sustained the demurrer as to the Recorder, on the ground that he was a public official; but overruled it as to the two physicians. It appears, then, that, in accordance with the latest decision of the Supreme Court of this State, any two of us who express the opinion that a man is insane, on any other ground than that he is dangerous to himself or others, become thereby liable to the annoyance of a suit for damages.

There have long been two opinions in the Society as to the propriety of dividing its meetings into sections—medical and surgical—the one party holding that the majority of the members were general practitioners, who came here to hear the papers read on all the various subjects of which their isolated positions compelled them to have the latest knowledge, and that if two papers were being read at the same time in different rooms, one of them was necessarily lost. The other side have claimed that by the division into sections more good could be accomplished in the necessarily limited period of the meeting. This year the number of good papers offered was so great that the Business Committee had no choice but to

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divide the meeting into sections, both to-day and to-morrow, as you have probably all learned from the provisional programme.

It would be, at times, a great convenience, if our volume of *Transactions* contained a list of the ex-officers of the Society, with the years of service of each, and it is respectfully suggested that such list be hereafter published each year.

It necessarily becomes the President's melancholy duty to announce to you each year some deaths from among our large number of members. This time the list, fortunately, is not long, the following only needing to be erased from the list of permanent members:

Dr. F. R. S. Drake, of New York, died March 11, 1888.

Dr. C. R. Agnew, of New York, President in 1872, died April 18, 1888.

Dr. Jacob Hunt, of Utica, died April 21, 1888.

Dr. Harvey Jewett, of Canandaigua, President in 1882, died September 4, 1888.

Dr. Frank G. Buckbee, of Fonda, died October 22, 1888.

To Dr. Jewett, and particularly to Dr. Agnew, the Society owes much more than can properly be expressed at this time. Appropriate record of their eminent services will at the proper time be made.

The only honorary member of whose death, during the past year, we have received information, is Dr. Edwin M. Snow, of Providence, R. I.

Trusting, gentlemen, that each and every one of you may find this meeting both pleasant and profitable, I now announce that the eighty-third session of the Society is open for the transaction of its regular business.

Dr. W. W. POTTER moved that the address be referred to a committee of three to report upon its recommendations. The motion was carried, and the President appointed as the committee: Drs. W. W. Potter, of Buffalo; George Seymour, of Utica; and W. G. Tucker, of Albany.

The President announced the following:

Business Committee: Dr. D. B. St. John Roosa, of New York; Dr. William S. Ely, of Rochester; Dr. Willis E. Ford, of Utica.

Committee on Credentials: Dr. W. B. Brown, of Bath; Dr. William L. Pearson, of Schenectady; Dr. C. M. Culver, of Albany.

The Secretary read the names of several gentlemen who had made application to be admitted as permanent members.

Dr. W. W. POTTER moved that the Society proceed to vote on their election.

Dr. H. BENDELL, of Albany, asked whether a resolution had not been passed at the last meeting requiring that all names of applicants for permanent membership be referred to the Committee on Nominations.

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Before the President passed upon this question, Dr. Potter changed the form of his motion to read, That the list of applicants for permanent membership be referred to the Nominating Committee.

The motion, after a few remarks in opposition by the Secretary, was carried, the understanding being that the Committee should make an early report.

A communication from Charles Rice, Ph.D., of New York, with reference to the revision of the Pharmacopœia, was referred to the Committee on that subject.

The Committee on Prize Essays handed in the following report, which was read by the Secretary, and, on motion, accepted by the Society:

To the Medical Society of the State of New York:

The Committee on Prize Essays respectfully report, that no essays were placed in the hands of the Committee for competition for the Merritt H. Cash Prize, during the past year. February 5, 1889.

GEORGE F. SHRADY,
F. P. FOSTER,
EUGENE BEACH,
Committee.

Dr. B. F. SHERMAN offered the following preamble and resolution, which, on motion was adopted *nem. con.:*

Whereas, There is now a bill before the Legislature which requires those bringing suits for libel against editors and publishers, to give bail for the amount of all cost; and,

Whereas, Ninety per cent. of all suits against medical men for malpractice are brought simply for blackmail; therefore,

Resolved, That the Committee on Legislation be hereby instructed to use all honorable means to have the above bill so amended as to include all suits for malpractice.

Dr. W. C. WEY stated that the Medical Association of Northern New York having become an incorporated body, desires representation in this Society, in accordance with the report and recommendation made by himself at last year's annual meeting, and that other incorporated medical societies also desired representation; and moved that a committee be appointed to define a basis of representation in this Society from voluntary medical organizations in the State of New York.

The motion was carried, and Drs. W. C. Wey, B. F. Sherman, and H. P. Loomis were appointed the Committee.

Dr. ALEXANDER HADDEN presented the report of the Committee on Legislation, as follows:

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MR. PRESIDENT: The Committee on Legislation has carefully considered the matters referred to it, and reports as follows:

1st. A proposed legislative enactment, in relation to the care and custody of the pauper and indigent insane in the counties of this State, except New York, Kings, and Monroe.

This your Committee considered an eminently humane measure, and endorsed the action of the New York State Charities Aid Association in its efforts to have it become a law.

2d. A communication from the Georgia Medical Society asking this State Medical Society to coöperate in petitioning the Congress of the United States to relieve from import duty all medical and surgical supplies, instruments, and appliances, on the grounds that they are used for the relief and cure of human ailments, and also that the physicians and surgeons should be considered entitled to all the benefits that might accrue therefrom, as an offset to their inability to restrict any of their inventions for medical and surgical use within the limits of patent rights and maintain their honorable standing in their profession. Your Committee concurred fully in the spirit of the petition, but not in the form presented, and, therefore, took no action to promote it in Congress. However, it occurs to the minds of the members of the Committee, that a people such as we are, so boundless in our sympathies and charities for the sick and suffering, ought not to be well pleased that our Government should derive any revenue from means for the relief and cure of such human misfortunes.

3d. A proposed legislative enactment to restrict undertakers in their liberty of using their so called embalming process on or into the bodies of the dead committed to their care. The bill was introduced into the Legislature of 1888, and was the outcome of a very able and suggestive paper on the subject read before this Society at the last session, by Dr. A. Walter Suiter, of Herkimer, N. Y. It was endorsed by your Committee after some changes were made in its form and provision, and supported when before the Legislative Committee, to which it had been referred. The opposition which it met in its progress was made by the Association of Undertakers and others. Your Committee, however, does not feel satisfied with the results of the effort to procure legislation on this highly important matter, and would recommend that an act be proposed by this Society to the Legislature of the State prohibiting the use of any preservative, either within or on the human corpse by those in charge, which might in anywise complicate medico-legal investigation, without the authority in writing of an official duly qualified by law to grant permission. This your Committee consider quite as necessary for the public safety as the guarding of burials by legal permits.

4th. Among the matters belonging to the unfinished business of previous years, the proposed legislative enactment creating a State Medical Examining and Licensing Board, has been brought to the attention of this Committee, with the earnest request that it be considered without delay.

Your Committee not feeling authorized to create a new bill, turned to the one which was devised and sanctioned by this body at its session of 1885, and is known as the compromise bill. This your Committee con-

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sidered might, if it did not become a law, form a basis, at least, for successful legislation, and, therefore, caused it to be introduced into the Senate January 28th last, and propose to urge its passage with all due diligence, unless countermanded by the action of this Society.

This bill, as may be seen in the recorded proceedings of this Society, was introduced into the Legislature of the State at the sessions of 1885 and 1886, and failed to become a law, and again recommended to be urged upon the law-makers in the address of the President of this Society, at the session of 1888, thereby giving confidence to the Committee that the Society would support it in its action.

Very respectfully submitted,

ALEXANDER HADDEN,
HENRY T. PIERCE,
F. C. CURTIS,
Committee on Legislation.

On motion, the report was accepted and laid over for future consideration, with the request that the Committee furnish a copy of the bill under consideration for the information of the Society; and it was further moved and carried that the bill be taken up for consideration at 4 P.M.

The Special Committee on the Revision of the U. S. Pharmacopœia reported through Dr. E. V. Stoddard, as follows:

To the Medical Society of the State of New York:

The Convention for the Revision of the Pharmacopœia, held in May, 1880, at Washington, adopted the following resolutions to provide for the calling of a similar Convention in 1890:

Resolved, That the President of this Convention shall, on or about the first day of May, 1889, issue a notice requesting the several incorporated medical societies, the incorporated medical colleges, the incorporated colleges of pharmacy, and incorporated pharmaceutical societies throughout the United States, and the American Medical Association, and the American Pharmaceutical Association, to elect a number of delegates, not exceeding three, and the Surgeon-General of the Army, and the Surgeon-General of the Navy, and the Surgeon-General of the Marine-Hospital Service, to appoint, each, not exceeding three medical officers, to attend a General Convention for the Revision of the Pharmacopœia of the United States, to be held in Washington, D. C., on the first Wednesday of May, 1890.

Resolved, That the several bodies, as well as the Medical Department of the Army, Navy, and Marine-Hospital Service, thus addressed, shall also be requested by the President to submit the Pharmacopœia to a careful revision and to transmit the result of their labors, through their delegates, to the Committee of Revision, at least three months before the meeting of the Convention.

Resolved, That the several medical and pharmaceutical bodies shall be further requested to transmit to the President of this Convention the names

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and residences of their respective delegates, as soon as they shall have been appointed; a list of whom shall be published, under his authority, for the information of the medical public, in the newspapers and medical journals in the month of March, 1890.

Resolved, That in the event of the death, resignation, or inability of the President of the Convention to act, these duties shall devolve, successively, in the following order of precedence, upon the Vice-Presidents, the Secretary, the Assistant Secretary, and the Chairman of the Committee of Revision and Publication of the Pharmacopœia.

Although something more than a year will elapse before the formal communication will be had from the President of the Convention of 1880 (Dr. Robert Amory, of Boston), it will be desirable for the Medical Society of the State of New York to consider the question of preliminary revision, as referred to in the second resolution; and especially the circular already addressed to all State medical societies by the Chairman of the Committee of Revision (Dr. Charles Rice, of New York) relative to the list of articles recommended to be incorporated in the Pharmacopœia to be issued by authority of the Convention of 1890.

A list of the articles non-officinal has been published by the present Committee of Revision as a basis for such recommendation, and is submitted herewith.

Another subject proposed for consideration by this Society is the use of parts by weight in the manufacture of all pharmaceutical preparations or of parts by weight for the solids and parts by measure for the liquids; the importance of this question, as it concerns physicians, being well expressed in the circular referred to, as follows:

The present Committee of Revision of the Pharmacopœia has undertaken the task of preparing for its successors as complete a record as possible of whatever has been published in the nature of criticism since the issue of the last edition of the work, that may be of practical use for the next revision. In addition to this, it has been resolved to solicit the coöperation of the medical and pharmaceutical professions toward arriving at a settlement of certain questions which can be advantageously discussed and practically disposed of at this time.

One of the most important matters which will have to be settled before the actual work of the next Committee of Revision can be commenced, will be to decide what shall be discarded from the present official list, and what new additions shall be made to it. The settlement of this question, particularly as to the admission of new drugs and the most suitable strength of preparations derived therefrom, devolves primarily upon the medical profession, and in view of the near approach of the time for a new revision of the Pharmacopœia, it would seem appropriate that steps be taken to obtain some authoritative expressions regarding the subject in advance of the organization of the next Committee of Revision.

Among other matters which will engage the early attention of this Committee, will be certain questions which are probably of more direct and special interest to the *pharmacist*, who *prepares* the remedies, than to the *physician*, who *employs* them and who cares more for the result and effects of a preparation than for the means or working formula by which it has been reached. Yet, as there is no subject relating to pharmacopœial revision, whether medical or pharmaceutical, which does not, more or less, interest

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both professions, it has been decided by the present Committee of Revision to invite all representative medical and pharmaceutical bodies to give their views on at least *one* of these topics, a final decision on which ought to be reached during the next Pharmacopœial Convention. This topic is the *system of weights and measures* to be used in constructing the working formulæ of the Pharmacopœia.

The Revision Committee of 1870 had been distinctly instructed to discard all definite weights and measures, and to employ "parts by weight" exclusively. This instruction, however, was evaded by the Committee, the following excuse being given by them in the preface to the Fifth Decennial Revision of the U. S. Pharmacopœia, 1870 (1872, p. xiv.):

"To execute such directions entails the use of a metrical system not employed in this country or in England, and which would have to be constructed for the purpose. Such a change would involve changed proportions in almost every formula, and would produce a corresponding disturbance in many of the doses. Moreover, such directions were not anticipated in any of the revisions handed to the Committee; and to institute such extended experiments as would cover the whole ground of the directions of the Pharmacopœia, would entail so much expenditure of time, labor, and cost, as to render the plan impracticable. This view of the question was unanimously taken by the Committee at a meeting consisting of ten members."

The Pharmacopœial Convention of 1880, in its turn, after a discussion of the subject, instructed the Committee of Revision subsequently elected, to employ "parts by weight," only leaving the class of fluid extracts at the discretion of the Committee. The latter, mindful of the dissatisfaction so markedly expressed at the disobedience of their predecessors, faithfully complied with the injunction; but the introduction of the change has elicited so much controversy and argument that it is even now uncertain whether the former system (definite weights and measures), or the present one (parts by weight) is preferred by the majority, particularly in the case of those preparations (such as tinctures, syrups, etc.) which are prescribed and administered by measure.

In order that the next Pharmacopœial Convention and Committee of Revision may be better enabled to arrive at a final and satisfactory decision of these important questions, it is respectfully requested that the several State Medical Societies consider the same, and notify the Chairman of the Committee of Revision of their action, at as early a date as possible, previous to January 1, 1890. It is suggested that, for the purpose of accomplishing the object most speedily, the aid of the several local or county societies be solicited.

Very respectfully,

CHARLES RICE,

Chairman of the Committee of Revision and Publication of the Pharmacopœia of the United States of America.

The Medical Society of the State of New York has always been among the foremost to take part in this important work, and it is to be hoped that this will be its course for the future. If the coöperation of county medical societies is to be solicited, as suggested by the Chairman of the Committee of Revision, it must be done between now and the next annual meeting of the Society, to be acted upon by the latter in time for the next Convention.

To provide for such preliminary work this Committee recommends that the President elected at this meeting be directed to appoint a Committee to report at the next annual meeting such recommendations as may seem desirable to be made to the Convention of 1890, and that such Committee be

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authorized to solicit from the several county medical societies an expression of their views upon the topics above referred to.

All of which is respectfully submitted.

F. A. CASTLE,
E. V. STODDARD,
LAURENCE JOHNSON,
Committee.

On motion, the report was accepted and the recommendations therein contained adopted.

The Business Committee then suggested that some action be taken to limit the time to be given to papers read before the Society.

A motion was made and carried, that fifteen minutes be the limit of time allowed for each paper.

The Business Committee announced that, owing to the number of papers presented, it would be necessary to divide the Society into a Medical and a Surgical Section, and that the Surgical Section would convene in another room at 11 A.M., and that the Vice-President, Dr. A. Walter Suiter, would be the Chairman of that Section.

The meeting of the Surgical Section was afterward postponed until afternoon.

Dr. CHARLES STOVER, of Amsterdam, read a paper, "Municipal Control of Diphtheria." Discussion was reserved till after the reading of papers on "Typhoid Fever."

Dr. J. LEONARD CORNING, of New York, read a paper, "Influence of the Mind upon the Body; being a Disquisition upon the Truths and Delusions of Psycho-therapeutics."

Dr. S. S. BURT, of New York, read a paper, "The Prevention and Treatment of Typhoid Fever."

Dr. EUGENE BEACH, of Gloversville, read a paper, "Diseases of the Circulatory Organs, complicating or following Typhoid Fever."

Dr. SIMON BARUCH read a paper, "Treatment of Typhoid Fever."

This, with previous papers, was discussed by Drs. C. E. Bruce, I. N. Goff, B. F. Sherman, A. N. Bell, and S. S. Burt.

Dr. F. C. CURTIS, of the Committee of Arrangements, presented a list of medical gentlemen, who, on motion, were invited to take seats as honorary members.[1]

Dr. T. E. SATTERTHWAITE, of New York, read a paper, "Embolic Pneumonia, based upon a Record of Eighteen Fatal Cases."

Discussed by Dr. B. A. Fordyce.

Dr. L. EMMETT HOLT, of New York, read a paper, "The Preven-

[1] The names of these gentlemen, and all other invited guests, may be found on page 9.

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tion of Summer Diarrhœa among Infants, viewed in the Light of the Lesions."

Dr. GRAEME M. HAMMOND, of New York, read a paper, "The Treatment of Chronic Constipation by Electricity."

Discussed by Drs. A. F. Currier, H. R. Hopkins, O. B. Douglas, S. S. Burt, L. Emmett Holt, and S. Baruch.

Notice having been given for the meetings of the members by Senatorial Districts to select the Committee on Nominations, the meeting adjourned until afternoon.

Afternoon Session.

The Society again convened at 2.30 P.M., in two sections. In the Medical Section, Dr. Ward presiding, the Committee on Hygiene presented their report,[1] through Dr. E. V. Stoddard, Chairman.

The report was accepted. A motion was made to adopt the resolution recommended in the report.

Dr. E. V. STODDARD: The evils referred to in the report have been recognized by us all, and suggestions with regard to their correction have been made from year to year; but it seemed to the Committee that the time had come to recommend, concerning some of these evils, the remedial measure, more particularly as to the care of the insane. With regard to the change of the territorial unit for local boards of health from town or village to county, that is a question which should be further investigated and reported on another year.

Dr. A. JACOBI: This subject of the care of the insane has been considered year after year by the State Board of Charities and by the press. An outcry was justly raised against the Legislature, when last year it refused to act on the recommendation of the State Board of Charities. Whoever knows anything about the condition of the insane poor in counties, will certainly favor immediate legislation on this subject, and I am heartily in favor of adopting the resolution.

Dr. E. H. HOWARD: There is a difference of opinion existing between the State Board of Charities and the State Charities Aid Association. The latter organization is in favor of the State assuming care of all the insane, both acute and chronic, and the passage of such a law was urged by this Society last year. The law introduced in the Legislature yesterday, is not the one which the State Charities Aid Association recommended in their report, and which Dr. Stoddard seems to recommend in this resolution. As yet there has been no bill introduced at this session providing for State care of all the insane.

[1] This report is printed, as usual, at the end of the communications.

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It should be distinctly understood that if we vote for this resolution, it would simply favor placing the acute insane in State asylums.

Dr. A. JACOBI: All who wish to see the condition of the insane improved will certainly favor taking the acute insane from county institutions and placing them in State asylums. But if I could choose, I should certainly vote for placing all the insane, both acute and chronic, in State asylums. I move to amend the resolution by inserting the words "and chronic" after the word "acute," making it read "acute and chronic insane."

Dr. E. H. HOWARD: I am in favor, at present, of the resolution as presented, because I believe the State is not yet ready to give all the insane proper care, as the State Asylums are already crowded.

Dr. A. JACOBI: It is a question of whether the insane can be treated in county poor-houses. I say they cannot; and if there are no houses to accommodate them if taken by the State, they should be built.

Dr. E. V. STODDARD, in response to an inquiry from Dr. Wey, stated that the bill now before the Legislature, and endorsed by the resolution, includes both the acute and chronic insane. The great evil, as recognized by the Committee, in placing the insane in county institutions arises from the difficulty of caring for the acute insane, and the first step in advance is the law suggested by the State Board of Charities, that the acute insane be placed in State institutions, by means of which their condition can be ameliorated as soon as possible. The step is in the direction of, and not against, the legislation desired by the State Charities Aid Association.

Dr. W. S. ELY: My reasons for hoping that Dr. Jacobi's amendment will not prevail are, that in certain counties, certainly in Monroe, there is ample provision for the chronic insane, probably better than in any institution in the State. The recommendation proposed by the amendment cannot be acted on for a number of years, whilst that proposed by the original resolution could receive prompt action.

Dr. W. C. WEY: I would say that there are few acute insane now sent to county institutions. The bill introduced by the State Charities Aid Association is evidently more in accord with the humanitarian principles which should actuate a State in legislating for its dependents. A law such as has been recommended by the State Board of Charities would give relief to but few county insane, while that of the Charities Aid Association would bring relief to the insane of every description.

The motion to amend was carried, and the resolution, as amended, adopted by a vote of 18 yeas to 15 nays. The resolution as adopted is as follows:

Resolved, That the detention of the acute *and chronic* insane in county asylums, as shown by the Report of the State Board of Charities, is an evil

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which should not be tolerated in any case, whether pauper, indigent, or private patient, and should forthwith be abated; that the recommendation of the said report for regulation and restriction of county care and for the radical reforms therein should be acted upon affirmatively and immediately.

Dr. JAMES B. HUNTER, of New York, read a paper, "Vaginal Hysterectomy."

Discussed by Drs. T. A. Emmet, Andrew F. Currier, W. W. Potter, and Hunter.

Dr. LUCIEN HOWE, of Buffalo, read a paper, "Purulent Conjunctivitis of Infants and Blindness in the State of New York," which closed with the following recommendation:

That the Committee on Legislation be instructed to formulate and recommend the passage of a law by which all midwives in this State shall be obliged to report the existence of any case of ophthalmia of infants within twenty-four hours after its occurrence, to the family physician, to the district physician, or to some legally qualified medical practitioner.

In further explanation of the recommendation, Dr. Howe said that the question was not one as to the original cause of purulent ophthalmia but as to what we should do to prevent it in the face of the figures which the official returns give us. The recommendation does not hold practitioners to the use of Credé's method, nor does it enforce on midwives any special form of treatment. It simply requires them to report cases of ophthalmia as they should any contagious disease; it requires only that midwives should report cases.

Dr. F. W. MARLOW spoke of the value of cleanliness, which he thought of more importance than the instillation of a two per cent. solution of nitrate of silver; he has not had a case of purulent ophthalmia since having had the child's eyes thoroughly washed immediately after its birth.

Dr. I. N. GOFF said that in country practice this disease was seldom met with, and blindness was not seen in children.

Dr. A. JACOBI: Those at the head of foundling asylums and obstetrical clinics see a great many cases of blindness from this cause. They are numerous in large cities. It is because the disease is so contagious. In most cases it is a part of general sepsis. With regard to the recommendation, I think it incompetent to accomplish the desired object. After the attention of a physician or the health authorities has been called to the case, the best time has been lost for Credé's treatment; it is not uncommon for the cornea to be perforated within twenty-four hours. Credé insists that the method should be applied in every case as soon as the child is born. The nurse should first disinfect her own hands, and use a clean sponge in washing the infant's eyes, otherwise

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the procedure would probably be more injurious than beneficial. It is preventive, and if midwives are to be controlled at all they must be directed to use the preventive method as soon as the baby is born. I should be in favor of some method looking to prevention in order to avoid the necessity of cure.

Dr. LUCIEN HOWE: Blindness is not as common in large centres as in the more sparsely settled districts, with one exception, and that is where the county has a high elevation; there blindness is rare. Often the country practitioner sees the woman in confinement only a short time, and ophthalmia develops after the infant is left to the care of the nurse. It is, I think Dr. Jacobi will admit, in exceptional cases that perforation of the cornea takes place within twenty-four hours. In most instances reporting of cases would prove beneficial. Parents should be made acquainted with the importance of attention to this disease, and be led to call in a physician in time for treatment, when it occurs.

The resolution was adopted.

The hour of 4 P.M. having arrived, the consideration of the Medical Examiners' Bill, as reported by the Committee on Legislation, was taken up. No copies of the bill having been provided, Dr. F. R. Sturgis, of New York, was asked to read the bill, which he did.[1] He said that this bill having been framed in 1886, contained objectionable features, as they conflicted with laws since passed, and which it is desirable should stand. The composition of the examining board called for seemed to him objectionable; he thought none of the members of the board should be connected with medical colleges.

Dr. D. B. ST. JOHN ROOSA: This bill met in the Legislature in 1886 the same opponents which it will meet now; a body of men with whom we do not agree in any respect, yet a body so influential that if we do not conform to their wishes in some measure, we shall never secure the passage of a bill. They will never consent to a bill which, as does this bill, gives the appointment of six of the nine members of the board to this Society, and of the three remaining members one to each of the medical colleges which may be chosen. We can get a bill if we are willing to have one which puts three homœopaths, five regulars, and one eclectic on the examining board, but a bill of the character of this one can never be passed, and to discuss further objections to it seems needless. I, therefore, move that a committee of three be appointed to confer with the gentlemen of the Senate and Assembly having in charge this bill providing for a State Board of Medical Examiners; that they be instructed to agree to a bill which will allow a complete majority representation of this Society.

[1] This bill is substantially the same as that printed, page 53 in the Transactions for 1886.

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Dr. H. G. PIFFARD offered, as an amendment, that the committee of three be the Standing Committee on Legislation, to which Dr. Roosa agreed.

Dr. A. VANDER VEER: I have little faith in the sincerity of the better class of homœopaths to work in harmony with us on this bill. But having had the opportunity to talk with members of the Legislature, I believe that if we place before them a bill that drops the question of therapeutics, they will accept it. I am willing to do that. The question of therapeutics is the handle which the objectors to a Medical Examiners' Board take hold of, and I believe if we drop that the Legislature will pass a bill.

Dr. DANIEL LEWIS: The first nine sections of this bill provide for a State Board of Medical Examiners, and I believe there is no division of sentiment on this subject in this Society. I am in favor of that portion of this bill, modified by Dr. Roosa's motion; but the remainder of the bill provides in a defective way for laws which have since been enacted in more desirable form. The whole question of license to practice, except with regard to examinations, provided for in the existing law, is perfectly satisfactory to us and all sects. I would move to amend Dr. Roosa's motion by instructing the Committee on Legislation to strike out from their consideration of this question all subjects contained in this bill after section nine.

Dr. ROOSA accepted the amendment.

A motion, by Dr. J. E. BURDICK, that the subject be laid on the table, was lost.

Dr. ROOSA then stated his motion as follows:

Resolved, That the Medical Society of the State of New York accept a suitable bill, to be passed by the Legislature, which gives it a majority representation on a Board of Medical Examiners, which bill does not interfere with the laws of the State regulating the practice of medicine as codified last winter and as they now stand.

Adopted.

The President then announced the Committee on Nominations as elected by the several Senatorial District meetings.

First District.—George H. Fox, of New York.
Second District.—Burke Pillsbury, of Middletown.
Third District.—Herman Bendell, of Albany.
Fourth District.—James Macfie,[1] of Fort Covington.
Fifth District.—H. G. DuBois, of Camden.
Sixth District.—Henry Flood, of Elmira.
Seventh District.—J. P. Creveling, of Auburn.
Eighth District.—L. A. Weigel, of Rochester.

[1] Dr. Macfie being obliged to leave, Eugene Beach, of Gloversville, was substituted.

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The President named as the member of the Committee from the Society at large W. W. Potter, of Buffalo.

Dr. A. F. CURRIER, of New York, read a paper, "The Disorders of Menstruation."

Discussed by Dr. A. Jacobi and the author.

The Special Committee on Representation in this Society of Voluntary Medical Organizations reported by its Chairman, Dr. Wey, as follows:

The Committee appointed to define a basis of representation in this Society from voluntary medical organizations in the State of New York, would respectfully recommend the adoption of the following resolution:

Resolved, That representation in this Society by incorporated voluntary medical societies be limited to one delegate, subject to the rules in existence in respect to delegates from county medical societies.

WM. C. WEY,
B. F. SHERMAN,
H. P. LOOMIS,
Committee.

The resolution was unanimously adopted.

On motion, the Committee on By-laws was directed to frame a by-law embodying this resolution.

Dr. T. D. CROTHERS, of Hartford, Conn., delegate from the Connecticut Medical Society, read a paper, "Inebriety from a Medical Point of View," which by a vote of the Society was referred to the Committee of Publication.

The meeting then adjourned until evening.

SURGICAL SECTION.

The Surgical Section was called to order Tuesday afternoon, February 5th, at 3 P.M., by the Vice-President, Dr. A. Walter Suiter.

The first paper of the session was read by Dr. BERNARD BARTOW, of Buffalo, "The Influence of Spinal Rotation in the Early Stage of Spondylitis."

The paper was discussed by Drs. L. A. Weigel, of Rochester, and A. M. Phelps, of New York.

The next paper was read by Dr. W. B. DE GARMO, of New York, "A Brief Consideration of the Present Surgical Treatment of Non-strangulated Hernia."

The paper was discussed by Drs. L. S. Pilcher, of Brooklyn; William Hailes, of Albany; J. P. Creveling, of Auburn; and W. C. Phelps, of Buffalo.

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At the close of this discussion, at 4.15 P.M., a recess was taken in order to enable the members present to join with the Medical Section to listen to the report of the Committee on Legislation.

The Surgical Section was called to order at 5 P.M., by the Vice-President, Dr. Suiter.

Dr. T. R. POOLEY, of New York, read a paper, "Operative Treatment of an Hyperostosis of the External Auditory Canal."

The paper was discussed by Drs. J. P. Creveling, of Auburn; Clarence C. Rice, of New York; O. D. Pomeroy, of New York; O. B. Douglas, of New York; and John O. Roe, of Rochester.

Dr. FRANK H. POTTER, of Buffalo, next read a paper, "Membranous Rhinitis."

The paper was discussed by Drs. Clarence C. Rice, of New York; John O. Roe, of Rochester; O. B. Douglas, of New York; and C. E. De La Vergne, of Brooklyn.

Dr. CLARENCE C. RICE, of New York, read the next paper, "The Efficacy of the Older Methods of Treating Nasal Disease Contrasted with Those of To-day."

After which the Section adjourned until 11 A.M. Wednesday.

Evening Session.

The Society reassembled at 7.30 P.M., President Ward in the Chair.

Dr. H. G. PIFFARD, of New York, gave an address on "Office Photography with the Flash Light," exhibiting an apparatus for the production of a large volume of bright light by blowing powdered magnesium through a low alcohol flame of nearly two inches diameter. He then exhibited on a screen, by aid of an oxyhydrogen projector, numerous enlarged representations of various skin diseases, from photographic slides prepared from negatives taken in his office by the flash-light.

At the conclusion of the exhibition a vote of thanks to Dr. Piffard was passed.

Dr. EDWARD D. FISHER, of New York, read a paper, "Cranial Measurements in Twenty Cases of Infantile Cerebral Hemiplegia."

Discussed by Drs. W. E. Ford, A. Jacobi, and E. D. Fisher.

Dr. WILLIAM HAILES, of Albany, read a paper, "A Case of Intubation of the Larynx."

Discussed by Dr. John O. Roe.

The meeting then adjourned, most of the members of the Society attending a reception given by the President at his house in Albany.

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SECOND DAY.—*Morning Session.*

The Society met at 9.45 A.M. Prayer was offered by Rev. H. C. Farrar, D.D.

The minutes of yesterday's sessions were read by the Secretary and approved by the Society.

Dr. H. H. DEANE, of Watertown, read the following communication from the Medical Society of the County of Jefferson:

WATERTOWN, N. Y., February 2, 1889.

To the Medical Society of the State of New York:

The members of the Medical Society of the County of Jefferson would respectfully call your attention to the fact that Jefferson County, and I presume all counties bordering on Canada, are being flooded with Canadian physicians, much to their detriment, especially in the smaller towns and villages.

There are two classes of physicians coming from abroad who may practice in this State.

First. Those who have been graduated from an incorporated medical school or college without the State as Doctors of Medicine, and shall procure their diplomas from said corporations, to be endorsed as specified in Sec. 2, Chap. 647, Laws of 1887.

Second. Those who have been licensed to practice physic or surgery under the laws of those European countries in which said degree (Doctor of Medicine) does not confer the right so to practice, and shall procure their licenses to be endorsed as specified above. And, of course, none can so practice without conforming to the laws of the State respecting registration.

In that portion of Canada called Ontario, a legal medical practitioner means a person registered under the "Ontario Medicine Act." Before being entitled to registration, he will have to present himself for examination as to his knowledge and skill for the efficient practice of the profession before the Board of Examiners appointed by the Council, and on the payment of the fee the Council has established, he would be entitled to be registered, and in virtue of such registration to practice medicine, surgery, etc., in the Province of Ontario. See Revised Statutes of Ontario, Chap. 148, Sec. 25.

I refer to the laws of Ontario, as those were the only accessible, and Ontario is that portion of Canada which borders on Jefferson County, and whence most come.

What is most complained of is that students who have graduated, but are not yet qualified to practice in their own country, come here, and have only to send their diplomas, not even present themselves, and have them endorsed by some medical college in this State, when they register and become legally qualified practitioners.

It is suggested that the present law concerning physicians from without the State or country be amended to read so that only those actually qualified to practice medicine and surgery in the State, province, or country

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from which they have received their diplomas or certificates of medical and surgical education shall be permitted the endorsement of their diplomas or certificates by any authority in this State. It is also suggested that a law might be passed placing a physician who has been expelled from any county society in the position of one practicing without a license.

Credit should be given Drs. C. G. Stevens, G. M. McCombs, and D. C. Rodenhurst, who have worked diligently to ascertain the facts, and to our District Attorney, F. H. Peck, who has rendered valuable assistance.

Respectfully submitted,

JAMES D. SPENCER,
President of Jefferson County Medical Society.

On motion, the communication was received and referred to the Committee on Legislation.

Dr. CHARLES H. PORTER read his report as Treasurer,[1] which was accepted and referred to an auditing committee consisting of Drs. W. C. Wey, George Seymour, and E. V. Stoddard.

Dr. PORTER made a statement in connection with his report regarding the condition of the treasury of the Society. At the last meeting of the Society there was a reported deficiency of $116, and this year the deficit amounts to $541.10, so that there is an apparent yearly deficiency of $440; which, with the present income and expenditure, is likely to continue. For the last few years there has been one unusual expense, coming from the Committee on Legislation, which has amounted to from $300 to $1500 a year, the annual expense for counsel for the last two years being $250, and travelling expenses from $40 to $150. Aside from the expense of this Committee, the accounts of the Society would be in about a normal condition. There would be, under present arrangements, a deficiency of about $150, which, however, could be made up by the sale of the *Transactions*.

Dr. PORTER also read his report as Trustee of the Merritt H. Cash Prize Fund, which was accepted.

The Committee on Nominations reported favorably on the list of applicants for permanent membership, and the Society voted their election. Their names, with those of three subsequently received, are: William C. Bailey, Albion, Orleans Co.; L. Bolton Bangs, New York; Bernard Bartow, Buffalo; Charles E. Bruce, New York; Stephen Smith Burt, New York; C. W. Crispell, Rondout; John H. Cipperly, Troy; Andrew F. Currier, New York; William B. De Garmo, New York; Francis Delafield, New York; A. C. Drury, Canton, St. Lawrence Co.; M. B. Folwell, Buffalo; George R. Fowler, Brooklyn; J. H. Glass, Utica; Graeme M. Hammond, New York; John L. Heffron, Syracuse; E. M. Hermance, Yonkers; F. Whitehill Hinkel, Buffalo;

[1] See reports.

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Alexander S. Hunter, New York; Paul H. Kretzschmar, Brooklyn; A. Ross Matheson, Brooklyn; Burke Pillsbury, Middletown; Clarence C. Rice, New York; Charles Stover, Amsterdam; Willis G. Tucker, Albany; S. O. Vander Poel, New York; John T. Wheeler, Chatham; R. A. Witthaus, New York; Gustavus S. Winston, New York; George E. Benson, Hudson; James D. Featherstonhaugh, Cohoes. The last three became members in accordance with the resolution passed at the meeting of 1886.

Dr. GEORGE SEYMOUR, of Utica, from the Committee on By-Laws, reported on the By-Laws of the Medical Society of the County of Jefferson, and recommended certain changes to bring them into conformity with the regulations of this Society.

It was moved and carried, that the By-Laws of the Medical Society of the County of Jefferson, with the alterations recommended by the Committee on By-Laws, receive the sanction of this Society.

Dr. LUCIEN HOWE, from the special Committee on Blindness, appointed two years ago (see *Transactions*, 1887, pp. xxxvi. and xl.), made a report, which was accepted, and ordered printed.

On motion of Dr. B. F. SHERMAN, the thanks of the Society were tendered to the committee for their laborious and successful efforts.

Dr. H. D. NOYES, in view of the importance of the subject, moved that this committee be continued.

The motion was unanimously carried.

The President appointed Dr. Daniel Lewis, of New York, to fill the vacancy on the Business Committee left by the departure home of Dr. Roosa.

Dr. A. WALTER SUITER introduced the following resolution, which was unanimously adopted, and referred to the Committee on Legislation:

Whereas, It is customary for undertakers to make use of a so-called embalming process, often before the death certificate by the attending physician has been prepared, which process, also, is apt to interfere with and confuse medical and legal investigations; therefore be it

Resolved, That the Committee on Legislation of this Society be instructed to prepare an act which will prohibit the use of all substances, except with the approval of the physician, coroner, or local board of health, which will in any manner interfere with tests which may be subsequently applied in such investigations; to present the same at the present session of the Legislature, and to use all proper means to secure its passage.

Dr. F. S. LOW, of Pulaski, called attention to the limited sale of the *Transactions*, which he thought was largely occasioned by the publication of many of the papers in the medical journals, and also by the distribution of reprints of these papers by the authors among the phy-

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sicians of this State, so that the better part of its contents reach the public before the publication of the *Transactions*. A larger revenue would be reached if the volume could be gotten out earlier or the publication of its articles in medical journals held back until after its appearance.

The Secretary stated that the sale of the *Transactions* had no doubt been interfered with in the way mentioned by Dr. Low, and suggested whether this might not be in a measure remedied by the Committee of Publication issuing the various papers as separate pamphlets, and distributing them as fast as printed, reserving to be bound into volumes enough copies to supply our exchanges with other societies and the libraries to which we donate the *Transactions*, and for our own library.

The resolution offered by Dr. Low, and the observations of the Secretary, were referred to the Committee of Publication, and instructions given for this Committee to consider if any changes in the mode of publishing the *Transactions* could be advantageously made, the Committee to report on the subject at the next annual meeting.

The Surgical Section now withdrew to its room, and the Business Committee called up the reading of papers.

Dr. A. L. Loomis, of New York, having obtained permission of the Society to read his paper in full, read "The Management of Cardiac Dilatation, based on its Etiology."

The paper was discussed by Drs. A. Jacobi, E. V. Stoddard, and A. L. Loomis.

Dr. J. R. Leaming, of New York, read a paper, "The Practical Application of Acoustics to the Physical Signs of the Human Chest in Diagnosis."

Dr. George M. Sternberg, U. S. A., of Baltimore, read a paper, "The Etiology of Croupous Pneumonia."

Discussed by Drs. A. L. Loomis, T. E. Satterthwaite, W. Hailes, and G. M. Sternberg.

On motion of Dr. A. N. Bell, the thanks of the Society were tendered to Dr. Sternberg, and a copy of his paper requested for publication in the *Transactions*.

The meeting then adjourned till afternoon.

Surgical Section.

The Surgical Section was called to order Wednesday morning, February 6, 1889, by the Vice-President, Dr. Suiter.

After discussion by Dr. O. B. Douglas, of New York, on the paper of Dr. Clarence C. Rice on "The Efficiency of the Older Methods of Treating Nasal Disease Contrasted with Those of To-day," which was

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read at the close of Tuesday's session; the first paper read was by Dr. J. P. Creveling, of Auburn, "Double Excision of the Elbow-joint."

Dr V. P. GIBNEY, of New York, read a paper, "The Orthopædic Treatment of Tubercular Disease of the Knee in Children."

Discussed by Drs. Robert F. Weir, of New York; O. B. Douglas, of New York; Bernard Bartow, of Buffalo; John Ridlon, of New York, and V. P. Gibney.

Dr. CHARLES A. POWERS, of New York, read a paper, "Kocher's Method of Reducing Sub-coracoid Dislocations of the Humerus," illustrated with cases.

The paper was discussed by Drs. L. S. Pilcher, of Brooklyn; Robert F. Weir, of New York; Robert Abbe, of New York; and T. H. Manley, of New York.

Dr. ROBERT ABBE, of New York, read a paper, "Contribution to the Surgery of the Spine," which was illustrated by clinical cases.

Discussed by Drs. V. P. Gibney, of New York; Robert F. Weir, of New York; L. S. Pilcher, of Brooklyn; F. S. Low, of Pulaski; C. L. Dana, of New York, and Robert Abbe.

The next paper was read by Dr. A. M. PHELPS, of New York, "The Management of Hip-joint Disease."

Discussed by Drs. Gibney, of New York; Ridlon, of New York, and A. M. Phelps.

Dr. ROBERT F. WEIR read a paper, "Treatment of the So-called Perityphlitic Abscesses."

Discussed by Drs. Kendall, of Oswego; Vander Veer, of Albany, and Weir, of New York.

The last paper of the session was read by Dr. HENRY D. NOYES, of New York, "Considerations Concerning the Operation for Hard Cataract."

The Surgical Section then, at 1.30 P.M., adjourned.

SECOND DAY.—*Afternoon Session.*

The Society was called to order at 2.45 P.M. by the President. Dr. W. W. POTTER made the following report:

To the Medical Society of the State of New York:

The Committee on the President's Inaugural Address respectfully recommends as follows:

1. That the Committee on Legislation be instructed to consider that portion of the President's Address which refers to the decision of the courts involving the responsibility of medical examiners in lunacy, and that it be further directed to take such action as it deems necessary, looking to the correction of any evils in the existing statutes on the subject, should any be found.

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2. That the question of the division of the Society into sections for the discussion of scientific subjects be left with the Business Committee to be so arranged each year as shall best promote the interests of the Society.

3. That the Committee on Publication be instructed to incorporate in the *Transactions* each year a list of all former officers, with their terms of service.

Respectfully submitted,

W. W. POTTER,
WILLIS G. TUCKER,
GEORGE H. SEYMOUR,
Committee.

Dr. GEORGE R. FOWLER, of Brooklyn, read a paper, "A Unique Case of Hernial Sac of the Pleura, in the Neck."

The Business Committee read the following papers by title: "On the Use of Sulpholeate of Sodium in the Treatment of Skin Diseases," by Dr. George H. Fox, of New York. "The Medical Treatment of Diseases of the Urinary Organs in Infants," by Dr. A. Jacobi, of New York. "Amblyopia in Diabetes, with Report of Six Cases," by Dr. W. O. Moore, of New York. "On the Use of Tobacco," by Dr. F. H. Bosworth, of New York. "The Treatment of Acute Inflammation of the Inner Ear," by Dr. Gorham Bacon, of New York.

The Vice-President took the Chair and the President read the Anniversary Address.

Dr. W. W. POTTER, of Buffalo, moved a vote of thanks to the President for his most excellent address, and that a copy of the same be solicited for the *Transactions*, and that one thousand extra copies of it be printed.

The motion having been put by the Vice-President, was unanimously carried.

Dr. H. R. HOPKINS, of Buffalo, read a paper, "Basedow's Disease."

Discussed by Drs. C. L. Dana and A. Jacobi.

Dr. C. L. DANA, of New York, read a paper, "Chronic Headaches."

Discussed by Drs. I. N. Goff, O. B. Douglas, C. M. Culver, George R. Fowler, and E. D. Fisher.

The Business Committee read the following papers by title: "The Use of Prismatic Spectacles for the Relief of Asthenopia caused by Insufficiency of the Ocular Muscles, with Reports of Cases," by David Webster, of New York. "Biographical Sketch of Dr. Frederic Hyde," by Dr. W. C. Wey, of Elmira. "Biographical Sketch of Dr. Harvey Jewett," by Dr. W. C. Wey.

Dr. L. S. PILCHER, of Brooklyn, read a paper, "A Contribution to the Surgery of Cerebral Tumors."

Dr. WILLIS E. FORD, of Utica, read a paper, "The Uses of Galvanism in Gynecology."

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Dr. DANIEL LEWIS read the report of the Special Committee on Quarantine Control. It was accepted, and will be found printed among the Reports.

Dr. J. H. GLASS, of Utica, read a paper, "Inferior Dental Neurectomy."

The Business Committee read by title: "Double Inguinal Hernia in a Pseudo-Hermaphrodite Operation," by Dr. Charles N. Dixon Jones, of Brooklyn.

The Secretary was directed, by vote of the Society, to place the names of D. M. Lee, of Oxford, Chenango Co., and Carlos F. McDonald, of Auburn, on the list of persons eligible to permanent membership.

The meeting adjourned at about 5.30 until the next morning.

THIRD DAY.—*Final Session.*

The Society met at 10 A.M., the President in the Chair. Prayer was offered by Rev. Dr. William S. Smart.

On motion, the reading of the minutes was dispensed with.

Dr. WILLIAM MANLIUS SMITH read the report of the Committee of Publication.

On motion, it was accepted. (See Reports.)

The Committee on Nominations reported by its Secretary, Dr. HENRY FLOOD, of Elmira, as follows:

To the Medical Society of the State of New York:

Your Committee on Nominations respectfully submits the following names for the action of the Society.

For President.—Daniel Lewis, of New York.

For Vice-President.—Alfred Mercer, of Syracuse.

For Secretary.—F. C. Curtis, of Albany.

For Treasurer.—C. H. Porter, of Albany.

For Censors.—SOUTHERN DISTRICT: L. Emmett Holt, of New York; S. Sherwell, of Brooklyn; and E. M. Hermance, of Yonkers. EASTERN DISTRICT: Joseph Lewi, of Albany; Thompson Burton, of Fultonville; and Leroy McLean, of Troy. MIDDLE DISTRICT: Robert Frazier, of Camden; C. L. Stiles of Owego; and J. H. Glass, of Utica. WESTERN DISTRICT: H. L. Elsner, of Syracuse; Frank H. Potter, of Buffalo; and B. A. Fordyce, of Union Springs.

For College of Medicine of Syracuse University.—I. N. Goff, of Cazenovia.

For Committee of Arrangements.—Samuel B. Ward, of Albany; Edward L. Partridge, of New York; and C. S. Merrill, of Albany.

For Committee on By-laws.—F. A. Castle, of New York; A. R. Simmons, of Utica; and F. C. Curtis, of Albany.

For Committee on Hygiene.—E. V. Stoddard, of Rochester; A. N. Bell, of Brooklyn; William B. Brown, of Bath; J. P. Creveling, of Auburn; William H. Bailey, of Albany; William C. Bailey, of Albion; and E. F. Brush, of Mount Vernon.

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For Committee on Legislation.—D. B. St. John Roosa, of New York; Burke Pillsbury, of Middletown; and Maurice J. Lewi, of Albany.

For Committee on Ethics.—A. Jacobi, of New York; Arthur Mathewson, of Brooklyn; and H. R. Hopkins, of Buffalo.

For Committee on Prize Essays.—George F. Shrady, of New York; F. P. Foster, of New York; and Eugene Beach, of Gloversville.

For Committee on Publication.—F. C. Curtis, of Albany; John O. Roe, of Rochester; O. B. Douglas, of New York; and C. H. Porter, of Albany.

For Honorary Members.—Howard Marsh, of London, England; Francis Bacon, of New Haven, Conn.; Reginald Harrison, of Liverpool, England; Morell Mackenzie, of London, England; William Pepper, of Philadelphia, Pa.; Max Schede, of Hamburg, Germany.

Eligible to Honorary Membership.—William H. Taylor, of Cincinnati, O.; Joseph Price, of Philadelphia, Pa.; George J. Engelmann, of St. Louis, Mo.; R. J. Levis, of Philadelphia, Pa.; Lennox Brown, of London, England; James Nevins Hyde, of Chicago, Ill.; and E. E. Montgomery, of Philadelphia, Pa.

For Delegates to State and other Societies:

British Medical Association.—Robert Abbe, of New York; Edward L. Partridge, of New York; L. Duncan Bulkley, of New York; William Hailes, of Albany; Edward D. Fisher, of New York.

Canadian Medical Association.—Floyd S. Crego, of Buffalo; James Macfie, of Fort Covington; and G. H. Oliver, of Dickinson Center.

Ontario Medical Association.—John Gerin, of Auburn; J. W. Whitbeck, of Rochester; James P. Boyd, of Albany; W. W. Potter, of Buffalo; H. G. Du Bois, of Camden; L. A. Weigel, of Rochester; G. M. Hammond, of New York; and W. B. De Garmo, of New York.

Connecticut Medical Society.—D. B. St. John Roosa, of New York; J. P. Creveling, of Auburn; and Andrew F. Currier, of New York.

Massachusetts Medical Society.—A. M. Phelps, of New York; O. B. Douglas, of New York; John O. Roe, of Rochester; and L. A. Weigel, of Rochester.

The Medical Society of New Jersey.—Walter B. Chase, of Brooklyn, and Thomas E. Satterthwaite, of New York.

The Medical Society of Pennsylvania.—C. L. Dana, of New York, and Henry D. Chapin, of New York.

The Medical Society of Virginia.—C. C. Rice, of New York; George H. Fox, of New York; and A. M. Phelps, of New York.

The Committee further submits for your consideration the following:

Resolved, That the President and Secretary be authorized and empowered to appoint additional delegates to American or foreign societies from the names of any members who may make application for such credentials.

The Nominating Committee found itself confronted at the outset of its labors with the declination of Dr. William Manlius Smith to serve the Society longer in the capacity of Secretary. The Committee feels that some

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formal recognition of Dr. Smith's invaluable services should be made a matter of record, hence respectfully suggests the adoption of the following:

Resolved, That the Medical Society of the State of New York learns with deep regret that Dr. William Manlius Smith, of Syracuse, feels it to be inconsistent with his other professional duties to continue further in the office of Secretary.

In tendering its thanks to Dr. Smith this Society desires to express its full appreciation of his inestimable services, often so perplexing and arduous, rendered during a continued period of twelve years; and in now regretfully parting with him in an official capacity, it hopes to continue its relations with him for many years as one of its most respected and valued members.

Respectfully submitted,

WILLIAM WARREN POTTER,
Chairman.

HENRY FLOOD,
Secretary.

The report was accepted.

Dr. WILLIAM MANLIUS SMITH, of Syracuse, moved to amend by substituting the name of E. V. Stoddard in place of I. N. Goff, for Censor of College of Medicine of Syracuse University, saying that Dr. Goff had been Censor now for two years, and the faculty of the College desired a change.

Dr. HERMAN BENDELL, of Albany, opposed the amendment, and it was lost.

Dr. F. C. CURTIS moved to amend the report by adding the names of Drs. L. Duncan Bulkley and Edward D. Fisher, of New York, and Dr. William Hailes, of Albany, as Delegates to the British Medical Association.

Carried.

The Society then proceeded to vote for the nominees of the Committee.

By vote of the Society the Secretary cast an affirmative ballot for each of the four first-named officers.

It was then moved that the rest of the nominees be elected together by a *viva voce* vote.

Dr. WILLIAM MANLIUS SMITH asked for a separate vote by ballot on the Censor for College of Medicine, Syracuse University, which request was granted by vote of the Society.

Dr. HAILES, of Albany, was appointed teller.

The vote stood—for E. V. Stoddard 7, for I. N. Goff 8. So Dr. Goff was declared elected.

The Society then elected the remainder of the nominees by a unanimous *viva voce* vote.

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Dr. L. D. BULKLEY, of New York, read a paper, "A Clinical Study of Alopecia Areata and its Treatment."

Discussed by Dr. William Hailes.

Dr. SEYMOUR presented the report of the Auditing Committee, as follows:

The Committee appointed to audit the accounts of the Treasurer, respectfully report that they have examined the same, with the accompanying vouchers, and find them to agree with the statement presented by the Treasurer in his annual report to the Society.

WILLIAM C. WEY,
GEORGE SEYMOUR,
E. V. STODDARD,
Auditing Committee.

Dr. BENDELL presented a communication from Dr. Charles H. Hitchcock, of New York, on an "Act to Promote the Care and Curative Treatment of the Pauper and Indigent Insane," etc.

On motion, it was referred to the Committee on Legislation, with power to act.

As the Committee on By-Laws had not reported a by-law embodying the resolution with regard to representation by incorporated voluntary medical societies, the Secretary was directed to request the new Committee on By-Laws to report next year such a by-law.

Dr. HENRY FLOOD, of Elmira, offered the following resolution, which was adopted:

Resolved, That as soon as the Chairman of the Business Committee is appointed, the Secretary of this Society shall notify each permanent member and delegate that the Business Committee [naming the Chairman and his post-office address] is ready to receive the titles of papers to be read at the next annual meeting.

Dr. FLOOD read the following, which was accepted, and directed to be recorded:

I hereby notify the Society that at the next annual meeting I shall move to make the following changes in the "By-Laws" in Part IV., Section 1, under the title of "Election of Officers, Permanent Members," etc. (Page 15 of "By-Laws.") To read as follows:

SECTION 1. The Committee on Nominations shall receive in writing from any member the names of suitable persons for the offices of the Society, and shall hold the same under consideration until the close of the second day of the session. On the morning of the third day of the session, the Committee shall nominate a complete list of all the officers to be elected, and of permanent and honorary members, and of persons eligible as honorary members, and of the members of standing committees elected by the Society, and of delegates to State or other societies.

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The Committee on Nominations shall select for presentation to the Society for permanent membership only the names of those previously made eligible, who shall have manifested an interest in the Society, by a continued attendance on its meetings, after the expiration of their term of service as delegate.

To make a nomination of either President, Vice-President, Treasurer, or Secretary, it is necessary to have a two-thirds vote of the whole number of the Committee, namely, six votes.

In nominating other officers of the Society, or in nominating the several committees, or honorary members, or eligible honorary members, or delegates to State or other societies, a majority vote is required.

If the Committee is unable to nominate any one or more of the above-named officers, committees, or members, it shall present to the Society the two names having the greatest number of votes in the Committee. In all other cases they shall present only the names of those who have received a majority of votes in Committee.

The election of the other nominees may, at the discretion of the Society, be by ballot, or by vote, accepting or amending the nominations of the Committee.

On the reception of this report the Society shall proceed to the election of officers. The President, Vice-President, Secretary, and Treasurer shall each be chosen separately by ballot, and those having the greatest number of votes for each office shall be declared elected.

Dr. FLOOD also moved that a special committee be appointed to revise the By-Laws, to report at the next annual meeting.

The motion was carried, and Drs. Henry Flood, of Elmira; W. B. Brown, of Bath; and F. C. Curtis, of Albany, were appointed the Committee.

The Secretary was directed to notify the permanent members and delegates of the existence of this Committee in the same circular in which he notifies them of the Business Committee, and to ask for suggestions for amendment and improvement of the By-laws of this Society.

Dr. HAILES offered the following resolutions, which were adopted:

Resolved, That the thanks of the Society be extended to all railroad companies which have given a reduction of fare to those attending the meetings of this Society.

Also,

Resolved, That the thanks of the Society be extended to the custodians of the City Hall, for their courtesy in granting the Society the use of the Common Council Chamber for its meeting.

Dr. F. C. CURTIS offered the following, and moved its adoption:

Resolved, That the thanks of this Society be extended to the President for his able conducting of the affairs of the Society during the year, and the

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impartial and courteous manner in which he had presided over its deliberations during this meeting.

The Secretary put the motion, and it was unanimously carried.

The President said: "I desire to thank the members of the Society most heartily for the courteous manner in which they have treated me while their presiding officer."

The meeting then adjourned, at 11.15 A. M.

WILLIAM MANLIUS SMITH,
Secretary.

The next annual meeting of the Society is to be held at Albany, N. Y., on Tuesday, February 4, 1890.

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REPORTS.

1. Treasurer's Report.

The Medical Society of the State of New York, in account with the Treasurer.

General Fund.

Received from County Medical Societies, Institutions, and Individuals, as follows:

Albany, 1888	$20.00	Brought forward	$550.00
Allegany, 1886, 1887, 1888	15.00	Medical Department, University of New York, 1888	5.00
Broome, 1888	5.00	Medical Department, Union University, 1888	5.00
Cattaraugus, 1888	10.00	Medical Department, University of Buffalo, 1888	5.00
Cayuga "	10.00	College of Physicians and Surgeons, New York, 1888	5.00
Chemung "	5.00	College of Medicine, Syracuse University, 1888	5.00
Chenango "	5.00	Bellevue Hospital Medical College, 1888	5.00
Clinton "	5.00	Long Island College Hospital, 1887 and 1888	10.00
Columbia "	5.00	New York Academy of Medicine, 1889	25.00
Erie "	25.00	Niagara Medical College, Buffalo, 1888	5.00
Essex "	5.00	Initiation Fee as Permanent Members from Drs. T. E. Martindale, L. H. Miller, F. G. Buckbee, Gorham Bacon, D. H. Cook, J. P. Boyd, H. Flood, C. A. Dewey, James Macfie, M. T. Babcock, L. Elwood, C. S. Merrill, A. R. Simmons, C. W. Bourne, R. H. Cameron, J. Leonard Corning, Willis E. Ford, Wm. H. Stuart, E. T. Brush, Alex. Hadden, F. N. Otis, G. S. Winston, D. M. Totman, J. Mott Throop, and C. W. Arthur (25)	125.00
Franklin "	5.00		
Fulton "	5.00		
Greene "	5.00		
Herkimer "	5.00		
Jefferson "	10.00		
Kings, 1889	60.00		
Lewis, 1888	5.00		
Livingston "	5.00		
Madison "	5.00		
Monroe "	15.00		
Montgomery "	5.00		
New York, 1889	120.00		
Onondaga "	15.00		
Orange, 1888	10.00		
Oswego, 1889	10.00		
Otsego, 1888 and 1889	20.00		
Putnam, 1888	5.00		
Rensselaer, 1888 and 1889	30.00		
Richmond, 1889	5.00		
St. Lawrence, 1888 and 1889	30 00		
Schenectady, 1888	5.00		
Schoharie "	5.00		
Steuben "	10 00		
Suffolk, 1889	5.00		
Sullivan, 1885, 1886, 1887, 1888	20.00		
Tioga, 1888	5.00		
Tompkins, "	5.00		
Washington "	10 00		
Yates "	5.00		
	$550.00	Received from Permanent Members, for annual dues:	
		2 for 1886	10.00
		14 for 1887	70.00
		146 for 1888	730.00
		10 for 1889	50.00
		Total	$1605.00

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Publication Fund.

4 volumes of	1886	$ 5.65
138 "	1887	189.76
326 "	1888	521.60
	Total Publication Fund	$717.01
	Total General Fund	1605.00
	Total Receipts	$2322.01

Expenditures.

The Expenditures for and on account of the Society from February 7, 1888, to February 5, 1889, were as follows:

Dr. W. M. Smith, services as Secretary	$500.00
Dr. W. M. Smith, expenses of Office	82.13
Dr. W. M. Smith, expenses of Committee of Publication	58.50
Dr. C. H. Porter, services as Treasurer	150.00
Dr. C. H. Porter, postage, envelopes, etc.	25.95
Dr. C. H. Porter, expressage and cartage of *Transactions*	1.40
Syracuse Journal Co., printing *Transactions*, etc.	1424.97
W. A. Purrington, professional services, Committee on Legislation	250.00
R. C. Shultz, stenographer	75.00
Committee on Legislation, expenses of	43.50
F. M. Johnson, services as janitor	25.00
Phœnix Insurance Co., on *Transactions*	21.00
Henry W. Foreman, rent	37.50
M. Kramrath, floor covering	15.00
Argus Co., printing, etc.	10.50
W. O'Neill, services as messenger	5.00
James J. Clark, services as messenger	5.00
P. B. Martineau, services as messenger	5.00
C. R. Martineau	1.50
N. Y. C. & H. R. R. R., freight on *Transactions*	4.00
N. Y. C. & H. R. R. R., freight on *Transactions*	4.75
N. Y. C. & H. R. R. R., freight on *Transactions*	4.75
Committee of Arrangements, cartage of chairs, etc.	2.25
W. M. Stetson, stationery	4.25
Due the Treasurer, as per report February 7, 1888	106.16
	$2863.11

Recapitulation.

Total disbursements	$2863.11
Total receipts, general and publication funds	2322.01
Due the Treasurer	$541.10

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County Societies, in arrears with the Medical Society of the State of New York:

Chautauqua, 1885, '86, '87, and '88	$40.00
Cortland, 1886, '87, and '88	15.00
Delaware, 1885, '86, '87, and '88	20.00
Genesee, 1885, '86, '87, and '88	20.00
Niagara, 1887 and '88	20.00
Ontario, 1885, '86, 87, '88	20.00
Orleans, 1888	5.00
Queens, 1884, '85, '86, '87, '88, and '89	50.00
Rockland, 1884, '85, '86, '87, '88, and '89	25.00
Saratoga, 1885, '86, '87, '88, and '89	40.00
Schuyler, 1880, '81, '82, '83, '84, '85, '86, '87, '88, and '89	45.00
Warren, 1885, '86, '87, '88, and '89	20.00
Wayne, 1885, '86, '87, '88, and '89	40.00
Wyoming, 1885, '86, '87, '88, and '89	20.00
Total	$380.00

CHARLES H. PORTER,
Treasurer.

2. REPORT OF THE MERRITT H. CASH PRIZE FUND.

Accrued interest at date of last report	$168.67
Accrued interest from Jan. 1, 1888, to Jan. 1, 1889	23.61
Total interest	$192.28

The Prize Fund ($500.00) and interest ($192.28) are on deposit at the Albany Savings Bank.

CHARLES H. PORTER,
Trustee Merritt H. Cash Prize Fund.

3. REPORT OF THE COMMITTEE OF PUBLICATION.

The Committee of Publication respectfully report that, in accordance with the By-laws, bids for printing the *Transactions* for 1888 were obtained from a house in New York, by the members of the Committee from that city, and from the publishers of previous volumes of the *Transactions* in Syracuse, by the Secretary. The latter was so clearly the more advantageous to the Society, that it was accepted by a vote of the Committee.

With a view to the prompt publication of the *Transactions*, a contract was entered into with the Syracuse Journal Company, by which it agreed to have a volume of 500 pages ready for delivery by the 1st of July, 1888, under forfeit of five dollars for each day of delay, provided such delay was not caused by failure to furnish copy or return proofs in due season.

The publishers lived up to their contract, but the book was not published till about August 21st. One full month's delay was occasioned by one author furnishing a part of his manuscript, with the promise of the rest immediately, but failing, partly from ill health, to keep his promise. A portion of what

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was sent was printed, and this necessitated waiting for the rest before the work could go on. Another portion of the delay was caused by failure to return proof, not due to the author, but due to the displacement by an employé of the Secretary of return proof, so that it was not known to have been received, and, after a due interval, a second proof was sent to the author. Another portion of the delay was caused by some lack of promptness on the part of secretaries of the county societies in sending list of officers and members of their societies.

The edition for 1888 was one thousand copies of the *Transactions*, and the cost per copy was $1.40. The selling price was, in accordance with the By-Laws, placed at $1.60. Less than the usual number of copies have thus far been disposed of.

WILLIAM MANLIUS SMITH,
Chairman Committee of Publication.

4. REPORT OF THE SPECIAL COMMITTEE ON QUARANTINE CONTROL.

The Committee on Quarantine Control was appointed by the President last year, and the time for presenting a report finally extended to this meeting.

The appointment was made in response to a communication emanating from a committee of the College of Physicians of Philadelphia, which favored the consolidating of all existing maritime quarantine establishments (and all to be hereafter instituted) under the control of the United States Marine-Hospital Service.

This recommendation of the Philadelphia committee was based upon a report on the condition and administration of the quarantine stations at New York, Philadelphia, and Baltimore.

The principal objections made to the New York station were as follows:

a. "The buildings at the observation station on Hoffman Island were not divided into a sufficient number of small apartments."

b. "The water-closets were not sufficiently numerous, nor were they all in good working order."

c. "The pumps by which the supply of sea-water used for flushing these closets was obtained were out of order. The soil-pipes reached the sea by a series of angular turns."

The Committee also commented upon the absence of a resident medical officer.

Other criticisms were made regarding bathing facilities, underground cisterns for washing water, lack of bedsteads, chairs, and various minor details of administration.

The investigation was made during the cholera invasion of 1887, and a present danger of the introduction of the disease into the country, through the port of New York, was widely published.

The question for your Committee to consider was whether all these defects, important and otherwise, could be more thoroughly remedied and prevented in the future, by taking control from the State of New York and vesting it in the Marine-Hospital Service.

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We have recently inspected the New York quarantine station, through the courtesy of Dr. W. M. Smith, Health Officer, and are able to report to the Society that the extensive improvements now in progress there will meet all the most important criticisms of the Philadelphia committee.

The large buildings are being subdivided into numerous small apartments by partitions of corrugated iron.

The water-closets are in detached buildings, with the most approved plan for disinfecting dejecta before they enter the soil-pipes, which are new and without angles. Ample bathing facilities are to be provided. The new plan for disinfecting luggage is above criticism.

A new concrete wall is completed around the buildings, and a sloping surface of asphalt will render surface drainage perfect. New landing and piers are well under way.

A crematory is completed on Swinburne Island, so that the disposition of the dead will be quite satisfactory even to the residents of Seguin's Point, where the burying-ground is located.

The appropriation by the State last year (the objections of the Governor having been withdrawn) was large enough to accomplish a renovation of the entire property under the control of the Quarantine Commission.

Your Committee believes these facts a complete demonstration of the willingness and ability of the State of New York to furnish proper facilities for maintaining an effective quarantine at this port.

Attention should also be called to the fact that the fears of the Philadelphia committee that cholera would escape quarantine and invade the country were not realized.

It has been claimed that political influences militate against proper administration in the Health Office, but your Committee is not willing to argue that such influences must forever be eliminated by vesting the control in any national board.

There are evident reasons why quarantine, which directly concerns our own citizens far beyond those of any other State, should be in our own hands. We are inclined, in that respect, to favor home rule.

Even though a great burden of testimony favored the proposed change, it is evident to your Committee that the consent of the State authorities cannot now or at any future time be secured for the change.

The history of all great questions relating to the public weal demonstrates the ability of public sentiment to secure a proper administration of public trusts.

There seems to be no obstacle in the way of the efficient administration of our present quarantine, provided that such influential bodies as this Medical Society of the State of New York shall urge upon the State such improvements as progressive sanitary science may from time to time indicate.

DANIEL LEWIS,
E. V. STODDARD,
CHARLES STORER,
Committee.

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THE ANNIVERSARY ADDRESS.

By SAMUEL B. WARD, M.D.,
ALBANY.

GENTLEMEN OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK: The laws of this country, and the practice in our criminal courts, differ in some fundamental respects and in many details from those existing under other civilized governments. With us the accused man is entitled to and, in the vast majority of instances, secures every possible opportunity for defence. He cannot be compelled to give evidence which would tend in the remotest degree to criminate himself; his wife may not give evidence against him; his physician and his legal adviser are not permitted to divulge any information which they may have received in their respective professional capacities; he himself is always supposed to be innocent until he is proved guilty; and the jury are charged to give the prisoner the benefit of every reasonable doubt. If the accused has means he can employ what legal counsel he may select; should he be penniless the court assigns to some lawyer the duty of defending him.

Undoubtedly the practice of having counsel for the defence originated in the manly desire in our race that no injustice should be done to a man ignorant of the law. At the present day it is not considered at all dishonorable for most eminent counsel to espouse the cause of a prisoner whom they know to be guilty; and by carefully concealing evidence of the existence of which they are perfectly aware; by confusing and embarrassing witnesses; by taking advantage of every legal technicality; by the weight of their erudition and personal character; and by their persuasive eloquence with the jury, they frequently succeed in making the worse the better cause appear. Their position is far different from that of the witness on the stand, who is supposed to tell the truth, the whole truth, and nothing but the truth. All this procedure may or may not be in strict accordance with the highest code of

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morals—may or may not, in the long run, be productive of the greatest good to the greatest number. It is certain that we as medical men have no more interest in it than any other body of reputable citizens.

But in a majority of criminal cases questions arise which no layman can answer, questions about which even members of our own profession may differ in opinion; the lawyers on both sides take counsel with the doctors, and the physician called to the stand to express a professional opinion becomes known as a medical expert.

There are other classes of cases, it is true, in which expert evidence becomes necessary, as in determining the strength of material used in constructing a bridge, a ship, or a piece of machinery. But every science is exact just in proportion as mathematics can be applied in working out or demonstrating its results; and, unfortunately for us, with the single exception of errors of refraction, mathematics does not come to our assistance in any degree worth mentioning. The capacity of a piece of Bessemer steel to resist a strain, longitudinal, lateral, or by torsion, is known with perfect accuracy within certain pretty narrow limits; it can be accurately expressed in figures; and it is not possible for truthful experts to make statements concerning it greatly at variance with each other. But the phenomena with which we are called upon to deal are of an entirely different order; can rarely become the subject of experiment; are extremely complex in their nature—so complex that to isolate the component elements and prove how much influence is to be ascribed to each, is up to the present time simply impossible; it remains a matter of judgment and opinion. Nor is this condition of things the result of any lack of diligence on our part, or want of native ability on the part of those who have in all the past ages applied their best energies to the study of medicine. It is simply inherent in the complex nature of the problems presented to us for solution. Hence it is that medical experts may honestly differ from each other more widely than those in most other professions.

If, however, questions of law or theology could be submitted to the expert on the stand as those in medicine are, it would be easy for counsel to procure opinions more radically at variance than those expressed by members of our own profession. The opprobrium cast upon us is, to a certain extent at least, undeserved and unjust. In support of this statement we have only to note how counsel

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wrangle with each other over many points of law arising in every case that is argued; how the decision of the lower court is on appeal alternately reversed and affirmed in each succeeding higher one until the court of last resort is reached; and how even the highest courts in the land have at different periods rendered decisions incompatible with each other. Or imagine for a moment the divergence of opinion which would become apparent if a materialist, a Unitarian, a Methodist, and a Roman Catholic were called upon the stand to express their views concerning justification by faith, the divinity of our Saviour, the doctrine of eternal punishment, or even the existence of a future state at all. And yet it is a matter of history that these men have had such profound faith in the eternal righteousness of their convictions that they would rather burn at the stake than abate one iota thereof. We can safely promise entire unanimity of opinion on all points as soon as this blissful state is attained by either the lawyers or the theologians.

The lawyer engaged on one side or the other of a criminal suit finds that medical points are necessarily to be raised, or thinks that they may be raised with advantage to his cause. We all know that almost every important case occurring in our daily practice presents some one or more features that are unusual, are rare, are sometimes almost inexplicable, and criminal cases are no exception to the rule. Counsel, therefore, looks about for some one of our profession to assist him. He presents his statement to a medical man and finds that his opinion is not of a nature to serve the purpose he has in mind. He goes to another and another, until finally he finds one who entertains opinions to suit him, or approximating thereto, and this one he engages to appear on the stand as an expert. One defect in the present law is that this man may be subpœnaed to appear in court at an inconvenient hour and distance, to the disappointments of his own patients, to the neglect of any and every other professional engagement, and kept waiting there an indefinite period of time for the paltry remuneration of fifty cents a day and eight cents a mile for travelling expenses. Such instances are, of course, exceedingly rare, and, as a rule, the medical expert is fairly compensated. In some cases the fee is agreed upon beforehand; in a few an effort is made to have it dependent upon the issue of the case—a condition which cannot be too strongly reprehended.

I believe that medical men, almost without exception, when they go into a case, fully intend and mentally resolve that they will not take sides, that they will make every effort when on the stand to

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live up to their oath, and to be as impartial as the judge upon the bench. But even the judge does not always succeed in not taking sides, and the doctor, like the judge, is but human. Moreover he, unlike the judge, has, in private at least, expressed an opinion, and he certainly wants to see that opinion prevail—primarily because he believes it to be the correct one, secondarily because it is his. In all callings, from religion to politics, every man innately rejoices in convincing others of the correctness of his views. Moreover, the lawyer is, collaterally at least, and in many cases primarily, working to win because his client is paying him. Had he been paid by the prosecution instead of the defence he would have taken an entirely different view of the case. He would not in either event tell an untruth; but he would under different circumstances attach very different values to the same item in evidence; would entertain very different opinions as to the credibility of witnesses; would cite another set of authorities and of precedents; would express to the jury an exactly opposite opinion, and call upon them as good men and true to render a diametrically opposite verdict. The unfortunate medical expect is also human, subject to like temptations and influences as other men. He knows that the public puts him on a different plane from the counsel, and expects him to tell what he believes to be the exact truth, no matter whom it may help or hurt. But then there are many points about which a man may be in doubt; about which he may entertain one belief at one time in his life, and another at another—I had almost said that he may believe as he chooses to believe; points that are not matters of fact capable of demonstration, but absolutely and wholly matters of opinion. And he knows that as the case now stands the side from which he accepts payment expects him to believe and express opinions tending in a certain direction.

Moreover, it is certainly true that there are a few men in our profession who entertain opinions differing widely from those of the large majority. These opinions expressed in private conversation, or in medical meetings, result in very little harm, because they are estimated at once at their true value. But the holders of such opinions are precisely the men whom the counsel in a desperate case is desirous of retaining. By them he can show to the jury how uncertain and divergent medical opinions are, and throw doubt upon the reliability of the evidence produced by the other side. For instance, in a rural community I have heard a physician, whose fine personal appearance, army experience, large and

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successful private practice, and gray hairs gave weight in the minds of the jury to every word he uttered—every man on the jury knew him by sight and reputation, and a majority of them personally—I have heard this physician say that, in his opinion, "any man who used any splint in the treatment of any form of fracture was guilty of malpractice." Such monumental nonsense as this is, of course, very rare; but the incident serves well to illustrate the abuses to which the present system of obtaining and using expert evidence is liable.

The physician selected as an expert considers his case carefully; he reads up the various authorities, paying, of course, considerable attention to those whose views agree with his own, and mentally remarking what sensible men they were; while the impression formed of those who differ from him is not nearly so complimentary. He looks up the records of similar cases in medical journals, and finally goes on the stand well prepared to answer truthfully the questions previously arranged to be asked him on the direct examination. During this investigation of the case it is sometimes curious to observe how the inquirer's opinions will become strengthened in the direction of the side which he has espoused. Without any real additional arguments having been brought to light, he will incline to give more and more weight to facts which seem to favor his views and become more and more inclined to make light of, or even ridicule, facts or opinions which militate against him. He often ends by being honestly persuaded that there ought to be no manner of doubt on points which are in reality very doubtful, and which at the outset he willingly admitted so to be.

When the expert goes on the stand he is first questioned by the lawyer on whose behalf he appears. The questions are hypothetical ones supposed to be based on the facts proven on the trial. As a rule this is fairly done, and the expert has no difficulty in giving honest, straightforward answers.

The direct examination completed, the counsel for the other side takes the expert in hand and his trials begin. In some cases—in the majority of cases perhaps—he receives perfectly fair treatment. The cross-examiner simply endeavors to bring out all the weak points in his views of the case, to show how very weak they may be, that they are matters of opinion and not of fact, that other honest men may take a different view of the case, and that an entirely different theory may not be wholly without foundation. Even though the treatment he receives be perfectly courteous the

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ordeal is a trying and disagreeable one. While he is honest and frank in his answers he must be very cautious in the wording employed, resting assured that every slip will be taken advantage of, and every response stretched to its utmost limit of construction, even if it be not entirely twisted out of its original meaning, when the case comes to be summed up before the jury.

At other times, and especially if the counsel is conscious of having a bad case, the expert may be treated very differently. Instead of its being assumed that he is a gentleman who has taken the stand for the sole purpose of giving information of a technical character and telling the exact truth, it is assumed that he is there for the purpose of aiding the side which called him, and sometimes it appears to be further assumed that he is scarcely hampered by the ownership of a conscience; he is treated as though it was known that he was lying and every effort must be made to catch him at it. Questions are asked which cannot be answered truthfully without conveying an entirely erroneous impression to the jury; a categorical answer is insisted upon, when such an answer without an explanation is virtually a falsehood; questions are asked which are capable of several different subsequent explanations; others which have, in the form in which they are put, absolutely no meaning at all. On one occasion I recollect a lawyer's laboriously going over all the organs and tissues of the body from the scalp to the toe-nails, and being informed by the medical expert that in his opinion no one of the organs was the subject of pathological change. He then inquired if this man was sound from head to foot, what ground he had to claim damages. The answer was that the functions of the nervous centres were so deranged as to prevent the claimant from pursuing his vocation and supporting his family. The expert was then requested to state to the intelligent jury precisely where these "functions" were located and what they looked like. By this time the expert was so thoroughly annoyed, angry, and disgusted that he declined, for the moment, to answer any more "stupid" questions, and woe betide the expert who for a single moment loses his temper.

Sometimes the "stupid" questions are put for the very purpose, which was reached in the instance quoted, of confusing, annoying, and angering the expert, or of catching him in apparent contradiction, the explanation of which to the average layman on the jury is always tedious and often impossible. At other times the questions are not intentionally "stupid," but are so simply by

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reason of a lack of medical knowledge on the part of the counsel propounding them. Your president last year in his inaugural address, speaking of medical experts, said, "Their testimony is often of little value, on both the direct and cross-examination, from the fact that the questions which they are called upon to answer are formulated by lawyers who have little medical knowledge; or if, as sometimes happens, a physician is employed to assist a lawyer, the lawyer not understanding the real import of the questions which his mentor may suggest, perplexes the witness, and too often places his assistant in an undignified position, so that medical expert testimony often disgraces our profession." When a lawyer is asking questions prepared for him by his medical expert for use in the examination, it is not uncommon to see a well-laid train of reasoning entirely destroyed by a single unexpected answer, when in point of fact the answer given is more favorable to his view than his medical friend had dared to expect or hope for, and the only trouble is that the counsel, not knowing enough of medicine to take advantage of it, abandons his argument just when success is within his grasp.

While medical experts are, as a rule, men of large experience in the practice of their profession, each of them must on some occasion have gone on the stand for the first time. The position is then to him novel and embarrassing. He is unfamiliar with the rules of the court, the audience is a strange one, and the counsel is not averse, if it suits his purpose, to take advantage of these circumstances. Sometimes the lawyer will undertake the process of brow-beating the witness, repeatedly reminding him that he is under oath; cautioning him to be careful about his statements; gesticulating violently; and sometimes succeeds in getting the young man, if he is at all bashful, in such a condition of mind that it is impossible for him to recollect facts with which he is perfectly familiar, or to couch his answers in appropriate language. A favorite device with some is to ask the expert concerning all the possibilities of the case, not taking at all into account the probabilities. The timid expert is perhaps unwilling to admit a possibility, fearing that his admission will be afterward misrepresented to the jury as expressing his opinion of what was a probability. Under such circumstances I have repeatedly heard good, honest, careful men deny the possibility of an occurrence which, in their cooler moments, and when they did not fear that their meaning would be misinterpreted and misapplied, they would freely admit. Indeed, since it is a matter

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of record that an iron tamping-rod, five feet long and three-quarters of an inch in diameter, has passed vertically through a man's skull, scattering his brain more or less extensively over a forty acre lot, the patient living more than twenty-five years afterward, and the accident resulting in no great permanent disability other than the loss of sight of one eye, it is difficult to swear that anything is impossible; and yet, an infinity of possibilities is not in the slightest degree probable.

One of the most unfortunate results of this condition of things is that it is frequently impossible to get the most substantial and reliable men among us to go on the stand under any circumstances or for any consideration, and their places are sometimes taken by ambitious men with more assurance than mental balance or experience, who see an easy way of attaining a notoriety which they mistake for well-founded fame, and whose main object is to be on the winning side, if that end can be attained without stretching their consciences beyond the breaking-point.

If the present system of obtaining medical expert evidence resulted simply in the annoyance occasioned to medical men, or the disgrace brought upon the profession by an apparent or real difference of opinion expressed on the stand, there would be great cause for complaint on our part, though we could not expect much sympathy from others. But it is respectfully submitted that above and beyond this, the present system does not tend to bring out the truth in the shortest and clearest manner; in fact, in many instances is believed to have resulted in a miscarriage of justice. Almost any lawyer of large experience in the conduct of criminal cases will tell you that he has been sometimes ashamed of the use which he has made of expert testimony, or else will gleefully chuckle over it. This matter was brought to the attention of this Society as long ago as 1879, when, in his anniversary address, Dr. Roosa so eloquently spoke of the evils attendant upon the present system.

Many remedies have been proposed, but up to the present time no action has been taken toward applying them. Dr. Loomis last year proposed that the questions to the expert should be framed by a medical man employed or appointed for that purpose. This would undoubtedly help matters to a certain extent, but would, after all, fall short of accomplishing all that might be wished for.

A well-known judge of the Supreme Court has suggested that in each judicial district a physician of eminence should be appointed

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by the court, whose duty it would be to appear as expert in every case where his services were required. This man would upon the stand be free from all the bias which arises from the fact that he is paid by one side or the other, and a great advantage would, without doubt, be gained. But he would be subjected to all the annoyances and vexations of the examination, and the plan would be manifestly impracticable on account of the varied acquirements demanded of the expert in different classes of cases. The same man can scarcely be expected to be an expert in chemistry, surgery, medicine, and obstetrics, and, while the expert would be free from partiality toward either side, his evidence would probably be entirely satisfactory in only some one class of cases. Moreover, there are few medical men who would be willing to be placed in a position where the expression of their individual opinion virtually results in the imprisonment of a fellow-being for a term of years or launches him into eternity. It is scarcely probable, again, that this plan would meet with the approbation of the legal profession, who would, naturally, desire that the views of each side should be presented in their best light.

In most cases where medical expert evidence is required, at least two physicians are called to the stand, and in many cases a half dozen. The remedy which we would suggest would be, that under such circumstances a board of three experts should be appointed by the court; one on the suggestion of the counsel for the defence, one nominated by the counsel for the prosecution, and a third by the court itself; that these experts should be paid by the court, and the charge divided equally between the two sides; that to this board of experts should be submitted in writing the questions involving medical matters; that the answers should be submitted in writing and sworn to, and that medical witnesses should not be required to go upon the stand. In the event of the failure of the board to entirely agree a minority report might be admitted, and if each side desired to be represented by two or three experts instead of a single one, there would be no objection.

The adoption of this course would certainly result in obtaining from medical experts opinions free from the bias which arises from the expectation of pecuniary reward from either side; the unseemly antagonisms between the expert on the stand and the cross-examining counsel would be avoided; and the ends of justice be more speedily and surely attained.

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COMMUNICATIONS.

I. The Etiology of Croupous Pneumonia.

By GEORGE M. STERNBERG, M.D.,
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Acute pneumonia is now generally regarded by the leading clinical authorities and pathologists in this country and Europe as a specific infectious disease. Green, in his article on "Inflammation of the Lungs" in Quain's *Dictionary of Medicine*, says:

"It is maintained by some observers that, like the specific fevers, it is due to a specific cause. Pneumonia, whilst differing from these fevers in not being contagious, resembles them in the typical character of its clinical phenomena, and to a less extent of its local lesion. The changes in the lung occurring in pneumonia cannot be induced by artificial injury of the organ, and it must, therefore, be admitted that there is something special in the inflammatory process."

This "something special" has been demonstrated by recent researches and it is the object of the present paper to give a historical account of the development of our knowledge with reference to this specific infectious agent, and of the experimental evidence upon which the claim is founded that the microörganism referred to bears an etiological relation to the disease in question.

Evidently if pneumonia is a specific infectious disease, the microorganism which causes it is widely distributed, and the development of an attack depends rather upon secondary predisposing and exciting causes than upon the accidental introduction of the specific agent.

It cannot be maintained that the disease, as a general rule, is transmitted from individual to individual, *i. e.*, by personal contagion. Clinical experience is entirely opposed to this view, although we have ample evidence that it may occur as an epidemic among individuals who are exposed to the same conditions of environment—as in jails, barracks, etc. Thus at Christiania, Sweden,

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an epidemic of pneumonia occurred in 1847 in the prison, during which sixty-nine of the prisoners were attacked. And again in 1866 and 1867, during a period of six months (December, 1866, to May, 1867), a similar epidemic was observed in the same prison—sixty-two cases. Other prison epidemics recorded are those at Frankfort in 1875 (75 cases) and in 1876 (98 cases), at Maringen in 1875 (83 cases) and in 1878 (58 cases); at the prison of d'Ansberg in 1880 (161 cases with 46 deaths in a period of five months).

Again, we have numerous records of village epidemics and of epidemics confined to single houses. In outbreaks of this character, as in epidemics of typhoid fever, of cholera, and of yellow fever, there is a succession of cases occurring at different intervals, but it does not follow that these cases bear any direct relation to each other. On the contrary, everything indicates that, as in the diseases mentioned, in the presence of the infectious agent, common predisposing causes relating to the environment, acting upon persons having various degrees of resisting power, induce attacks at various intervals; or, it may be that in the presence of the specific cause and predisposing influences an exciting cause, such as exposure to cold, alcoholic excess, etc., is the immediate factor in the development of an attack.

Without stopping to discuss further the facts relating to the epidemic prevalence of the disease under consideration, I call attention to the well-established fact that pneumonia prevails over a wide area of the inhabited surface of the earth, and that by far the larger number of cases occur independently of any recognized connection with previous cases, and often under circumstances in which such connection can be very positively excluded. And, on the other hand, the direct transmission of the disease by the sick to those most closely associated with them, as nurses, etc., if it occurs at all, is evidently a rare exception to the general rule.

We must then conclude, as stated at the outset, that if pneumonia is a specific infectious disease, the microörganism which causes it is widely distributed. As a matter of fact, the pathogenic micrococcus, which from the evidence now at hand appears to be the specific etiological agent in acute pneumonia has been found in the buccal secretions of healthy individuals in various parts of the world, in America, in France, in Italy, and in Germany, and no doubt more extended researches will show that it is extremely common.

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This statement may appear at the outset to make the view that the micrococcus in question is the cause of croupous pneumonia quite untenable. For, it may be asked, how is it that the individuals who have this microörganism in their buccal secretions escape an attack of pneumonia. In the present state of our knowledge this question no longer presents any serious difficulties. We know, for example, that the pus organisms—staphylococcus pyogenes aureus, albus, and citreus—are very frequently found in the buccal secretions, and on the surface of the body of healthy individuals, and that although these micrococci are recognized as the cause of furuncles, and of all sorts of acute abscesses, they only give rise to the formation of such abscesses under certain special conditions relating to the general health of the individual, or to a traumatism by which their introduction to vulnerable parts is effected. Again, the tetanus bacillus is a widely distributed microörganism which has been found in the earth, and especially in rich loam, in various parts of the globe. But the hands of farmers and gardeners are constantly soiled with such earth, without their contracting tetanus. In this instance it has long been recognized that a traumatism is an essential factor in the chain of events which leads to the development of tetanus, and now we believe, on satisfactory experimental evidence, that it is not the traumatism *per se*, or the injury to nerves, or exposure to cold, which in certain cases gives rise to this infectious malady, but that the result depends upon the introduction of a specific infectious agent at the time the wound was received, or subsequently—the tetanus bacillus of Nicolaier.

In the case of the tubercle bacillus also, it is extremely probable, in the light of our present knowledge, that this bacillus, in a living condition, not infrequently finds a lodgement in the mouth, upon the Schneiderian mucous membrane, or in the larger bronchial tubes of most individuals who live in populous communities. Here also the infectious agent is only one factor, although an essential one, in the production of the infectious disease. It must be introduced to the vulnerable location and must find a favorable nidus in the tissues invaded. We have good reason to believe that in this as well as in other infectious diseases there are wide differences, inherited or acquired, in the susceptibility of the tissues to invasion when the infectious agent has been introduced to a favorable location.

In a paper read before the Pathological Society of Philadelphia

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in April, 1885, in discussing the relation of my *Micrococcus Pasteuri* to croupous pneumonia, I say:

"It seems extremely probable that this micrococcus is concerned in the etiology of croupous pneumonia and that the infectious nature of this disease is due to its presence in the fibrinous exudate into the pulmonary alveoli.

"But this cannot be considered as definitely established by the experiments which have thus far been made upon the lower animals. The constant[1] presence of this micrococcus in the buccal secretions of healthy persons indicates that some other factor is required for the development of an attack of pneumonia; and it seems probable that this other factor acts by reducing the vital resisting power of the pulmonary tissues, and thus making them vulnerable to the attacks of the microbe. This supposition enables us to account for the development of the numerous cases of pneumonia which cannot be traced to infection from without. The germ being always present, auto-infection is liable to occur when from alcoholism, sewer-gas poisoning, crowd-poisoning, or any other depressing agency the vitality of the tissues is reduced below the resisting point. We may suppose also that a reflex vasomotor paralysis, affecting a single lobe of the lung, for example, and induced by exposure to cold, may so reduce the resisting power of the pulmonary tissue as to permit this micrococcus to produce its characteristic effects.

"Again, we may suppose that a person, whose vital resisting power is reduced by any of the causes mentioned, may be attacked by pneumonia from external infection with material containing a pathogenic variety of this micrococcus having a potency, permanent or acquired, greater than that possessed by the same organism in normal buccal secretions."

This is the theory by which I have attempted to explain the etiological *rôle* of this micrococcus in croupous pneumonia. Let us now consider the principal facts which have led to a belief in its causal relation to this disease.

Friedländer,[2] in 1882, observed in eight fatal cases of pneumonia, in which he made autopsies, microörganisms having an oval form in the exudate into the pulmonary alveoli; they were in pairs or in short chains. Without affirming that this microörganism is the cause of pneumonia, Friedländer seems to have considered it extremely probable that it bore an etiological relation to the disease.

During the same year Leyden and Gunther announced, at a meeting of the Medical Society of Berlin (November 20, 1882), that they had found the same micrococcus in the fibrinous exudate

[1] I should have said "frequent" instead of "constant presence."

[2] Die Schizomyceten bei der acuten fibrinösen Pneumonie. Virchow's Arch., Bd. 87, 1882.

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of pneumonia, obtained through the thoracic walls by means of a Pravaz syringe. At the same time Gunther stated that the elliptical cocci, in specimens stained with gentian-violet, were surrounded with a colorless capsule.

The following year Matruy[1] published his observations. In sixteen cases he had found an elongated coccus in the fibrinous exudate of pneumonia, and always having a very transparent capsule. He had also encountered the same microörganism in the sputa of patients with other diseases, but not so abundantly as in pneumonia.

On the 19th of November, 1883, Friedländer[2] communicated to the Medical Society of Berlin the results of his culture and inoculation experiments. His "pneumococcus" was characterized by the presence of a capsule, which, as he says, "always takes the form of the microörganism; if this is round, the capsule is round; if it is elliptical, the capsule is an ellipse." This capsule, however, was only found in preparations made from the blood of an inoculated animal or from the fibrinous exudate into the alveoli; in cultures it was no longer seen. The cultures in flesh-peptone gelatine presented a nail-shaped growth which was believed to be characteristic. Growth was rapid in a variety of culture media at the ordinary room-temperature (65° to 75° Fahr.), and in a gelatine culture-medium no liquefaction occurred.

The following results were obtained by Friedländer in his inoculation experiments. In one series of experiments the "pneumococci" mixed with distilled water were injected through the thoracic walls into the lungs. Nine rabbits inoculated in this way gave an entirely negative result. Six out of eleven guinea-pigs are said to have succumbed, and to have presented the lesions of pneumonia. All of the mice injected died within twenty-four hours, and at the autopsy the lungs were found to be congested and to present foci of red hepatization. In a second series of experiments upon mice they were made to inhale a spray containing the pneumococci in suspension. Several of these animals died, and are said to have presented a typical pneumonia. The "pneumococcus" surrounded by its characteristic capsule was found in the lungs, the spleen, the blood, and the liquid contained in the pleural cavity.

Upon this evidence Friedländer's "pneumococcus," which is now

[1] Ueber Pneumonie-Kokken. Wiener med. Presse, June, 1883.

[2] Die Mikrokokken der Pneumonie. Fortschritt der Medicin, Bd. 1, 1883.

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usually described as a bacillus, was very generally accepted as the specific cause of fibrinous pneumonia, and cultures were distributed throughout the laboratories of Europe bearing the label "Pneumococcus of Friedländer." For some time after the publication of Friedländer's paper all observations made with reference to the presence of oval cocci or of encapsulated cocci in the fibrinous exudate of pneumonia were supposed to confirm his discovery. But now we know that there is another oval coccus which is far more frequently present in the exudate of acute pneumonia, which also presents the appearance of being surrounded by a transparent capsule—less pronounced, however, than that of Friedländer's bacillus —but which is entirely distinct from that of Friedländer, and is probably the true pneumococcus. I shall give the distinctive characters of this microörganism later.

At the same time that Friedländer was pursuing his researches in Berlin, Talamon, a French physician, was engaged in similar researches in the laboratory of the Hôtel Dieu. His results were communicated to the Anatomical Society of Paris, on the 30th of November, 1883, a few days after Friedländer's communication to the Medical Society of Berlin (Germain Sée).

"Talamon did not describe his microbe as having a capsule; according to him, the pneumonia-coccus is characterized by its form. When seen in the fibrinous exudate the microbe has an elliptical form, like a grain of wheat. Cultivated in a liquid medium—an alkaline solution of extract of beef—it is elongated and attenuated and presents the appearance of a grain of barley. On account of this appearance Talamon has proposed to call it the *lanceolate coccus*. This organism is encountered in the pneumonic exudate obtained after death or drawn during life by means of a Pravaz syringe from the hepatized portions of the lung. Once only, out of twenty-five cases, it was found in the blood of a patient at the moment of death."

Talamon's inoculation experiments in dogs and guinea-pigs gave a negative result, but out of twenty rabbits injected through the walls of the thorax into the lungs, eight showed the characteristic lesion of fibrinous pneumonia. Prof. Sée says with reference to the evidence in the case of these rabbits, as compared with that obtained by Friedländer in his mice:

"The rather brief description of the lesions obtained by Friedländer in the mice inoculated by him leaves some doubt in the mind; for the presence of foci (noyaux) of induration in congested lungs is not sufficient to characterize fibrinous pneumonia. But the lungs of the rabbits presented by Talamon to the Anatomical Society in support of his communication leave

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no room for discussion. As he observed, it was not at all a question of foci of congestion or of broncho-pneumonia, such as one observes habitually in rabbits which die of septicæmia, but a veritable lobar fibrinous pneumonia with pleurisy and pericarditis of the same nature. The naked-eye examination, as well as the microscope, showed no difference in the lesions produced in the rabbit and the pneumonia of man."[1]

On another page Prof. Sée says:

"Afanassiew repeated in the laboratory of Professor Cornil the experiments of Friedländer and of Talamon; by the culture in peptonized gelatine of the pneumonic exudate taken from the cadaver he obtained two species of organisms—round micrococci of large and small dimensions and oval cocci which corresponded to the microbes described by the two authors (Friedländer and Talamon) whose researches we have just reviewed."

This quotation indicates that Prof. Sée did not question the identity of the oval or "lanceolate" coccus found by Talamon in pneumonic exudate, and which in his experiments produced typical pneumonia in rabbits, and the so-called "pneumococcus" of Friedländer, which, according to his account, gave a negative result when injected into rabbits, but caused pneumonia in mice when injected directly into the lungs. Prof. Sée was not alone in making this inference, which has turned out to be a mistaken one. The identity of the oval cocci, which had now been seen in the pulmonary exudate by numerous observers, with the microörganism which Friedländer had isolated and cultivated from material obtained post-mortem from hepatized lungs was generally admitted; and all of the observations relating to the presence of oval cocci, having a more or less distinct capsule, in the exudate of fibrinous pneumonia, were supposed to give support to the alleged discovery of Friedländer. Now we know that the oval coccus most frequently found in such material is not that of Friedländer, but that it is identical with a coccus first observed by the writer in September, 1880, in the blood of rabbits injected with his own saliva, and subsequently (1885) named by me *Micrococcus Pasteuri.*

This was without doubt the coccus which produced pneumonia in Talamon's experiments upon rabbits; and we must give him the credit of having first experimentally demonstrated the fact that fibrinous pneumonia may be induced by the introduction of this microörganism into the parenchyma of the lung in these animals.

Salvioli, whose experiments were also made in 1884, had a

[1] Des Maladies spécifiques du Poumon. Par le Professeur G. Sée. Paris, 1885.

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uniformly fatal result from the injection of pneumonic sputum into rabbits (4). He also observed the oval coccus in the material injected and in the blood of the animals which succumbed to his injections, but did not recognize the identity of this coccus with that which my own experiments and those of Pasteur, Vulpian, and others had shown to be present in normal human saliva, and to induce a fatal form of septicæmia in rabbits. On the other hand, he also appears to have taken it for granted that the oval micrococcus encountered by him, and which, under certain circumstances, was surrounded by a transparent capsule, was the "pneumococcus" of Friedländer. Klein[1] appears to have made the same mistaken inference. This is shown by the following quotation from his paper published in 1885:

"In seeking to ascertain what might be the relation between the so-called pneumococci and croupous pneumonia, I have made extensive examination of the lungs and blood of persons dead of the disease, and also of the sputum of living patients at various stages of their illness. . . . . In some of the air-vesicles, though few and far between, there were present undoubtedly the capsulated cocci spoken of by Friedländer and others as pneumococci. . . . . As regards the living patients, if we examine typical sputum of croupous pneumonia, we find, besides numerous red blood-disks and white blood-corpuscles, also a few epithelial cells, and in the general gelatinous matrix numbers of microörganisms, chiefly belonging to the species micrococci. . . . .

"These are, as far as size and arrangement goes, of two principal types: (*a*) oval micrococci about 0.001 mm. in length, occurring isolated, but more commonly as dumb-bells and slightly curved chains of four, six, and even eight elements. . . . . But in all these micrococci the elements are distinctly surrounded by a hyaline zone, which in stained preparations can be made out as an unstained halo; though in some stained specimens it assumes a tint that is fainter than that of the micrococcus itself; this corresponds to the capsule of Friedländer, and for this reason he called them the capsule micrococci."

In a foot-note to the paper from which I have quoted, Klein says:

"While this paper was passing through the press, I received from Dr. Sternberg, of Baltimore, a paper in which he conclusively proves that the micrococci of human saliva, which produce in some instances septicæmia on inoculation into rabbits, are identical with the pneumococci of Friedländer, Salvioli, and others."

[1] The Etiology of Acute Croupous Pneumonia (Human), and of Pleuro-pneumonia (Cattle). Fourteenth Annual Report of Local Government Board, London, 1885.

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My own experiments with pneumonic sputum were made in January, 1885, and led me to the identification of the oval coccus found in this material with the coccus found in my own saliva (by inoculations in rabbits), in September, 1880, and subsequently studied by me in an extended series of experiments made during the following years, 1880–1884.[1]

But at the same time I fell into the error of inference previously made by Professor Sée, by Salvioli, and others, and assumed that the "pneumococcus" which Friedländer had obtained from the same source was the same, although I found it difficult to reconcile the experimental data, inasmuch as he had obtained uniformly negative results in his inoculations into rabbits. To explain this discrepancy, I suggested that Friedländer's pneumococcus was probably a variety having a different degree of pathogenic power.

This supposition seemed to find support in the fact, which I had previously observed, that my micrococcus Pasteuri became attenuated, as to its pathogenic power, when the cultures were kept for some time; and that there seemed, from the experimental evidence before me, to be different pathogenic varieties in the buccal secretions of different individuals. At this time I had not seen a culture of Friedländer's bacillus. Later, in the autumn of 1885, when I made its acquaintance in Dr. Koch's laboratory, I recognized my mistake and hastened to correct the error.[2]

For a detailed account of my experiments with pneumonic exudate, I must refer to my paper published in the *Transactions of the Pathological Society of Philadelphia* (vol. xii.), and in the *American Journal of the Medical Sciences* (July, 1885).

With reference to my conclusion that the oval coccus of Talamon and of Salvioli was identical with my micrococcus Pasteuri, I may

[1] A Fatal Form of Septicæmia in the Rabbit produced by the Subcutaneous Injection of Human Saliva. Johns Hopkins University, Stud. Biological Laboratory, Baltimore, 1882, ii. No. 2, 183–200, 1 plate. Also, National Board of Health Bulletin, vol. ii. 981.

Experiments with Disinfectants. Johns Hopkins University, Stud. Biological Laboratory, Baltimore, 1882, ii. No. 2, 201–212. Also, National Board of Health Bulletin, Washington, 1881, vol. iii. No. 4.

Induced Septicæmia in the Rabbit. Amer. Journ. Med. Sci., Philadelphia, 1882, lxxxiv. 69–76.

Virulence of Normal Human Saliva. Medical Times, Philadelphia, Nov. 4, 1882.

Germicide Value of Therapeutic Agents. Amer. Journ. Med. Sci., April, 1883, pp. 321–343.

[2] See my paper published in the American Journal of the Medical Sciences for July, 1886.

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say that this conclusion has been sustained by the subsequent investigations of Fränkel, Weichselbaum, Bordoni-Uffreduzzi, Netter, Gamaléia, and others.

Fränkel's first paper relating to the presence of this microörganism in pneumonic exudate was published in 1885.[1]

Having ascertained that his own saliva contained this oval micrococcus, he was induced to make an extended and interesting series of experiments which led him to the conclusion that this microörganism is far more constantly present in the exudate of fibrinous pneumonia than is the so-called "pneumococcus" of Friedländer. He says:

"Finally, as regards the relative frequency of the two hitherto investigated microörganisms in cases of pneumonia, no positive statement can yet be made. Nevertheless, I am inclined to regard the lancet-shaped pneumonia-coccus, which is identical with the microbe of sputum septicæmia, as the more frequent and the usual infectious agent of pneumonia, on the ground that this organism is so much more frequently found in the sputum of pneumonic patients than in that of healthy individuals. This conclusion is further supported by the fact that it has not hitherto been possible to isolate directly from the rusty sputum, Friedländer's bacillus."[2]

The extended researches of Weichselbaum,[3] published in 1886, gave strong support to the view that this coccus is the usual infectious agent in "croupous pneumonia." He examined, in all, the exudate in 129 cases of pneumonia.

In 94 of these cases the micrococcus in question, called by Weichselbaum "diplococcus pneumoniæ" was obtained (54 times in cultures); in 21 cases he obtained a streptococcus and in 9 only was the bacillus of Friedländer encountered.

Wolf,[4] whose studies were made in Weichselbaum's laboratory, reported the result of his researches in 1887. He found the "diplococcus pneumoniæ" in 66 out of 70 cases of croupous pneumonia examined, and the "pneumococcus of Friedländer" in three cases.

Netter,[5] whose paper was published in November, 1887, found M. Pasteuri in seventy-five per cent. of his cases of pneumonia, and in the sputum of convalescents from this disease its presence was

[1] Bacteriologische Mittheilungen. Verhdlg. d. Vereins f. innere Med., July 13, 1885; Deutsche med. Wochenschrift, No. 31, p. 546, 1885.

[2] Zeitschrift fur klin. Med., Band x, H. 5 u. 6, 1886.

[3] Wiener med. Jahrbucher, 1886.

[4] Wiener med. Blatter, 1887, Nos. 10–14

[5] Compt. rend. hebdom. d. séances de la Société de Biologie, 1887, Nov. 4, No. 34.

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verified in sixty per cent. of the cases by inoculation experiments in rabbits. He makes the interesting observation that the sputum of recent convalescents is less virulent for rabbits than that collected at a later period.

Gamaléia who has recently published, in the Annales of the Pasteur Institute, an important paper on the etiology of fibrinous pneumonia, verified the presence of M. Pasteuri in twelve fatal cases in which he collected material post-mortem. He states that in a series of forty successive cases Dr. Goldenberg, whose experiments were made in his laboratory, found this micrococcus in every case by inoculation experiments in rabbits or in mice. According to Gamaléia, inoculations in mice are more reliable than those made in rabbits, as the mouse is the more susceptible animal. He says:

"The author, Weichselbaum, who has made the most extended research upon the etiology of pneumonia, used in his researches the method of cultivation upon gelatine. We must adopt the opinion of Baumgarten, who does not accord any decided value to the negative results of Weichselbaum with reference to the constant presence of streptococcus Pasteuri. Netter, who adopted the method of inoculating the pneumonic sputum into rabbits, and who only found the microbe of Pasteuri in seventy-five per cent. of his cases, was wrong, in our opinion, in making use of an animal which is too resistant to determine the presence of small quantities of virus. This opinion is confirmed by the fact that Netter rendered some rabbits refractory by his inoculations with material in which he had not found the specific microbe.

"*En résumé*, taking our stand upon the positive results which we have always obtained, as well as upon the superiority of the method of research (inoculation in mice) which we have adopted, we believe ourselves authorized to conclude that fibrinous pneumonia is always dependent upon the microbe of Pasteur."[1]

Fränkel, Weichselbaum, and other recent authors, while maintaining that micrococcus Pasteuri is the most frequent etiological agent in the production of pneumonia, have been disposed to admit that in a certain proportion of the cases the bacillus of Friedlander and possibly other microörganisms may bear the same relation to the pneumonic process. Gamaléia, on the other hand, believes that the bacillus of Friedländer is a simple saprophyte, the occasional presence of which in pneumonic exudate is without etiological import. He remarks as follows:

"We may be brief as regards the second objection made against the etiological unity of fibrinous pneumonia, viz., with reference to the etiolog-

[1] Annales de l'Institut Pasteur, tome ii., No. 8, August 25, 1888, p. 447.

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ical rights of the microbe of Friedländer. This microbe is found in normal saliva, it is a true saprophyte, and may at times invade the diseased or dead lung. Weichselbaum only found it in seven per cent. of his cases, and almost always associated with other microbes, for he only encountered it pure in three cases. As to the researches of the authors who preceded Fränkel, it is sure that the microbe which they often found in sections of diseased lungs, and which they called the microbe of Friedländer, was, in fact, the microbe of Pasteur, since it was colored by the method of Gram, which decolorizes the bacillus of Friedländer. Many of the positive results, then, which have been reported relative to the last-mentioned microörganism, ought to be put to the account of the other."

This opinion the present writer has entertained since his researches made in 1884 and 1885.

The experimental evidence offered by Gamaléia in favor of the etiological *rôle* of this micrococcus is most important. It will be remembered that Talamon produced typical pneumonia in eight rabbits, in 1883, by inoculating them through the thoracic walls with pneumonic exudate. Gamaléia says:

"The number of my rabbits in which pneumonia was induced is about two hundred."

The writer found in his experiments made in 1881 that in making a series of inoculations in rabbits the virus increased in virulence; and that, on the other hand, the micrococcus lost its virulence when the cultures were kept for some time. This fact has been verified by the subsequent researches of Fränkel and of Gamaléia. The last-named author has shown that to induce pneumonia in very susceptible animals, like the rabbit, an attenuated variety of the microbe should be injected, for the most virulent cultures quickly cause death by septicæmia. As he expresses it:

"Animals which are too susceptible, like the rabbit and the mouse, do not have pneumonia, because they do not offer a local reaction, the virus is generalized in their bodies, and they die of an acute septicæmia."

On the other hand, Gamaléia has shown that

"Animals which are but little susceptible to the pneumonic virus, offer a local resistance which gives rise to very pronounced reactionary phenomena (extended fibro-granular œdema), and consequently they present, as a result of intra-pulmonary infection, a typical fibrinous pneumonia. Such animals are the dog and the sheep."

In his experiments upon these animals Gamaléia obtained the following results:

The sheep was found to survive subcutaneous inoculations, un-

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less very large doses (5 c.c.) of the most potent virus were administered. But intra-pulmonary inoculation was always followed by typical fibrinous pneumonia, which in the majority of cases proved fatal.

The microbe was rarely found in the blood, and successive inoculations from one sheep to another were not successful. Death occurred after an intra-pulmonary inoculation on the third, fourth, or fifth day. The pneumonia produced was lobar and was attended with an extensive fibrinous exudation in which the coccus was found in great abundance. In all, fifty sheep were experimented upon.

The writer found in his experiments made in 1881 that the dog resists inoculations with this coccus. Gamaléia also obtained negative results when moderate doses were injected beneath the skin, but states that "intra-thoracic infection always causes a frank fibrinous pneumonia, which is rarely fatal; recovery usually occurs in from ten to fifteen days, after the animal has passed through all the stages of red and gray hepatization which characterize this affection in man." Twelve dogs were experimented upon.

This micrococcus, then, which in very susceptible animals (mouse, rabbit) invades the blood and quickly causes death by septicæmia, when injected through the thoracic walls in less susceptible animals—dog, sheep—or in an attenuated form in the rabbit, gives rise to the local lesions which characterize fibrinous pneumonia.

Man comes in the category of slightly susceptible animals, as is shown by the comparatively small mortality from pneumonia, and the fact that the micrococcus found in the exudate into the pulmonary alveoli does not invade the blood—unless in rare instances.

We may, therefore, agree with Gamaléia in the following statement:

"It is clear that the results obtained in the dog and the sheep, animals which have but a slight susceptibility, are most applicable to human pathology."

In my paper, read before the Pathological Society of Philadelphia in April, 1885, from which I have already quoted, I say:

"It seems extremely probable that this micrococcus is concerned in the etiology of croupous pneumonia. . . . But this cannot be considered as definitely established by the experiments which have thus far been made upon the lower animals."

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The experiments of Gamaléia go far toward settling this question in a definite manner, and considered in connection with those of Talamon and Salvioli, and the extended researches of Fränkel, Weichselbaum, and Netter, leave but little doubt that this is the true infectious agent in acute lobar pneumonia.

THE PRESENCE OF M. PASTEURI IN THE SALIVARY SECRETIONS OF HEALTHY INDIVIDUALS.

In September, 1880, while engaged in investigations relating to the etiology of the malarial fevers, I injected a little of my own saliva beneath the skin of two rabbits as a control experiment. To my surprise the animals died, and I found in their blood a multitude of oval microörganisms, united for the most part in pairs, or in chains of three or four elements. These experiments are recorded in my paper entitled, "Experimental Investigations relating to the Etiology of the Malarial Fevers," published in the report of the *National Board of Health* for 1881, pages 74 and 75.

In December of the same year, Pasteur observed this micrococcus in the blood of rabbits which died (December 13) as a result of an inoculation with the saliva of a child which died of hydrophobia in one of the hospitals of Paris.[1]

Following up my experiments made in New Orleans (in September, 1880), in Philadelphia (January, 1881), and in Baltimore (March, 1881), I obtained the following results:

"The saliva of four students, residents of Baltimore (in March), gave negative results; eleven rabbits injected with the saliva of six individuals in Philadelphia (in January), gave eight deaths and three negative results; but in the fatal cases a less degree of virulence was shown in six, by a more prolonged period between the date of injection and the date of death. This was three days in one, four days in four, and seven days in one."[2]

The fact that the micrococcus in question varies very much as to its pathogenic power, as a result of conditions relating to the medium in which it develops, etc., was insisted upon in the paper from which I have quoted, and has been fully established by later researches (Fränkel, Gamaléia).

I found that cultures which had been kept for one or two weeks

[1] National Board of Health Bulletin, Washington, ii. (1881) p. 781. Also, in Studies from Biological Lab. Johns Hopkins Univ., Baltimore, ii. (1882) pp. 183–200.

[2] Comptes rend. Acad. d. Sci., 1881, xcii. p. 159.

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no longer exhibited any virulence when injected beneath the skin of a rabbit. On the other hand, virulence was increased by passing through the rabbit. This is shown by the following quotation from the same paper:

"In the dog the vital resistance is competent to withstand the assaults of the micrococcus—injected subcutaneously—having the potency of those found in my saliva, and the result of such an injection is simply a circumscribed abscess. But the increased power (which is, perhaps, simply a more vigorous and rapid development) gained by cultivation in the body of the rabbit, enables these organisms to overcome the resistance of the dog, and a diffuse cellulitis results of a fatal character."

This result was obtained in a single experiment, in which 1 c.c. of serum from the subcutaneous cellular tissue of a rabbit recently dead was injected beneath the skin of a dog.

Again, I say in the same paper:

"Unfiltered serum from a recently dead rabbit has invariably proved fatal in smaller quantity, and in less time than is required by the saliva in the first instance, showing an increase of virulence as the result of successive cultivation of the organism in the body of a susceptible animal."

Claxton,[1] in a series of experiments made in Philadelphia in 1882, injected the saliva of seven individuals into eighteen rabbits. Five of those died within five days, and nine at a later period.

In a paper published in the *Journal of the Royal Microscopical Society* (June, 1886), I say:

"My own earlier experiments showed that there is a difference in the pathogenic potency of the saliva of different individuals, and I have since learned that the saliva of the same individuals may differ in this respect at different times. Thus, during the past three years injections of my own saliva have not infrequently failed to cause a fatal result, and in fatal cases death is apt to occur after a somewhat longer interval, seventy-two hours or more; whereas in my earlier experiments the animals infallibly died within forty-eight hours."

Fränkel, whose first publication was made in 1885, discovered the presence of this micrococcus in his own salivary secretions in 1883, and has since made extended and important researches with reference to it.

The saliva of five healthy individuals and the sputa of patients suffering from other diseases than pneumonia, injected into eighteen rabbits, induced fatal "sputum septicæmia" in three only.

[1] Virulence of Normal Human Saliva. The Medical Times, Phila., June 17, 1882.

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When he commenced his experiments his saliva was uniformly fatal to rabbits, but a year later it was without effect.

Wolf[1] injected the saliva of twelve healthy individuals and of three patients with catarrhal bronchitis into rabbits and induced "sputum septicæmia" in three.

Netter[2] examined the saliva of one hundred and sixty-five healthy persons, by inoculation experiments in rabbits, and demonstrated the presence of M. Pasteuri in fifteen per cent. of the number.

Vignal[3] in his recent elaborate paper upon the microörganisms of the mouth says:

"Last year I encountered this microbe continually in my mouth during a period of two months, then it disappeared and I did not find it again until April of this year, and then only for fifteen days, when it again disappeared without appreciable cause."

IMMUNITY.

With reference to the question of immunity from pneumonia when the specific agent of this disease is present in the salivary secretions; or the failure, in many cases, to extend from the invaded lobe to other portions of the same lung, Gamaléia offers the following explanation:

"In order to study better the mechanism of the immunity of the healthy lungs in the presence of the *streptococcus Pasteuri*, we made the microscopic analysis of the sputa of an individual who, in the month of December, 1887, experienced an attack of fibrinous pneumonia under our observation, and who subsequently had a chronic bronchitis and expectorated constantly a quantity of pneumonic microbes, virulent for rabbits.

"The sputa were of mucus and adhered to the vessel; under the microscope they presented almost a pure culture of the specific streptococci, some polynuclear globules, and the large cells called endothelial (Staubzellen), having a large round nucleus and filled with granules. Attentive examination showed that the last-mentioned cells, which have quite the character of *macrophages*, contained enormous quantities of *streptococcus Pasteuri* in various stages of disintegration. One may find in the same cell typical diplococci mingled with contracted and angular forms that by comparison alone can be assimilated with the specific microbes. In this way one may be convinced that the débris contained in the *macrophages* is the remnant of pneumonic microbes. The polynuclear leucocytes also contained the *streptococcus lanceolatus*, but in much smaller quantity.

[1] Wiener med. Blatter, Nos. 10–14, 1887.

[2] Compt. rend. hebdom. d. séances de la Société de Biologie, Nov. 4, 1887, No. 34.

[3] Archives de Physiologie norm. et path., 3e série, x. p. 292.

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"These phenomena give us, it seems to me, the explanation sought of the immunity of the pulmonary tissues. The pathogenic microbes, even when they exist in a very great quantity in the bronchial mucus, and arrive in the pulmonary alveoli, are arrested there in their development by the *macrophages* (Staubzellen) which take them in and digest them. In this struggle the endothelial cells may also die and be rejected in the sputa." (Loc. cit., p. 457.)

This explanation in accordance with the so-called "Metschnikoff theory" has been offered by the writer in an attempt to explain immunity from infectious diseases generally, at a date which I believe to be prior to the publication of Metschnikoff's first paper. And it was the observation of the presence of the same micrococcus in the leucocytes of inoculated rabbits that led me to this explanation. In support of my statement I quote from my published works as follows:

In a paper read at the meeting of the American Association for the Advancement of Science, in Cincinnati, August 18, 1881,[1] I say:

"It has occurred to me that possibly the white corpuscles may have the office of picking up and digesting bacterial organisms when by any means they find their way into the blood. The propensity exhibited by the leucocytes for picking up inorganic granules is well known, and that they may be able not only to pick up but to assimilate, and so dispose of, the bacteria which come in their way does not seem to me very improbable in view of the fact that amœbæ, which resemble them so closely, feed upon bacteria and similar organisms."

In a paper[2] published in the *American Journal of the Medical Sciences*, in 1881, after showing that Pasteur's "exhaustion theory" of immunity is untenable, I say:

"The view which I am endeavoring to elucidate is, that during a non-fatal attack of one of the specific diseases the cellular elements implicated, which do not succumb to the destructive influence of the poison acquire a tolerance to this poison which is transmissible to their progeny, and which is the reason of the exemption which the individual enjoys from future attacks of the same disease."

In my chapter on "Bacteria in Infectious Diseases," in *Bacteria*,[3]

[1] A contribution to the study of the bacterial organisms commonly found upon exposed mucous surfaces and in the alimentary canal of healthy individuals. Illustrated by photo-micrographs. Proc. Amer. Assoc. Adv. Sci., 1881, Salem, 1882, xxx. 83–94. Also, in Studies from the Biolog. Lab. Johns Hopkins Univ., Baltimore, vol. ii., No. 2, 1882.

[2] What is the explanation of the protection from subsequent attacks, resulting from an attack of certain diseases, etc., Amer. Journ. Med. Sci., April, 1881, p. 376.

[3] Wm. Wood & Co., New York, 1884.

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published in the spring of 1884, but placed in the hands of the publishers in 1883 (Preface dated August 15, 1883), I say:

"In the disease produced by inoculation with saliva, or with a culture fluid containing the micrococcus under consideration, owing perhaps to the rapid development of the micrococcus, no such limiting wall of inflammatory exudation is established; and we find the subcutaneous connective tissue diffusely infiltrated with serum which swarms with the parasites.

"The failure to restrict the inroads of the parasite may not be due alone to its power of rapid multiplication. It is not improbable that some poison is produced, during its active growth, which lowers the vital resistance of the tissues and prevents the occurrence of adhesive inflammation. And it may be that the true explanation of the immunity afforded by a mild attack of an infectious germ disease is to be found in an acquired tolerance to the action of a chemical poison produced by the microörganism, and consequent ability to bring the resources of nature to bear to restrict invasion by the parasite."

The theory of immunity, here clearly stated, has subsequently received strong support from the experiments of Salmon (1885) in this country, and of Roux[1] in Pasteur's laboratory.

But does a single attack of acute lobar pneumonia afford any protection from subsequent attacks? This question may be divided into two. Is that portion of the lung invaded in a first attack subject to a similar process at a subsequent date? Is the individual who has suffered an attack of fibrinous pneumonia subject to a second attack? The second question, if we speak of pneumonia in a general way, not differentiating catarrhal pneumonia from acute fibrinous pneumonia, must be answered in the affirmative, for that second attacks of pneumonia may occur cannot be questioned.

As to acute lobar pneumonia, which we have learned to look upon as a specific infectious disease, I am not able to give a definite answer from my own experience, or from an examination of the literature at hand, and the question is here stated for the purpose of eliciting information.

MORPHOLOGICAL AND PHYSIOLOGICAL CHARACTERS.

Figures 1 and 2 are from camera lucida drawings, and represent the organism as it appears in the blood of an infected rabbit, or in active growth in a suitable culture medium, when stained with one of the aniline colors. Although when in active growth the elements

[1] Sur l'Immunite contre le Charbon conférée par des substances chimiques. Annales de l'Institut Pasteur, August, 1888 (vol. ii., No. 8).

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are of an oval or lance-oval form, this microörganism is nevertheless a micrococcus, or according to the classification of Zopf a

Fig. 1.

Fig. 2.

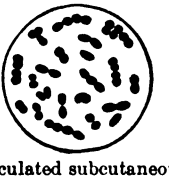

Fig. 1.—*Micrococcus Pasteuri* from blood of rabbit inoculated subcutaneously with normal human saliva (Dr. S.). Stained by the method recommended by Friedländer. Magnified 1000 diameters.

Fig. 2.—*Micrococcus Pasteuri* from blood of rabbit inoculated subcutaneously with fresh pneumonic sputum from a patient in the seventh day of the disease. Same staining and amplification as Fig. 1.

streptococcus; for it approaches the spherical form in old cultures, in which the development is tardy or has ceased altogether, and in

Fig. 3.

Fig. 4.

Fig. 3.—Surface culture of *M. Pasteuri*, showing development of long chains. Same staining and amplification.

Fig. 4.—Surface culture of *M. Pasteuri* from blood of rabbit injected with pneumonic sputum, showing the so-called "capsule." Same staining and amplification.

surface cultures upon agar-agar is often seen in long chains, as in Fig. 3. In blood and in recent cultures in a liquid medium it is

Fig. 5.

Copied from illustration accompanying the paper of Dr. G. Salvioli in the *Archivo per le Scienze Mediche*. Turin, vol. viii. Tav. viii. Fig. 2. "Cells of the pleuritic exudation containing pneumonia-cocci, mounted in Canada balsam." Stained with gentian-violet.

commonly seen in pairs or in chains of three or four oval elements. The appearance of a capsule seen in Fig. 4 is far from being con-

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stant, and is best seen in preparations made from the blood of an animal recently dead, or in the rusty sputum of pneumonia. In unstained preparations this so-called "capsule" appears as an aureole or transparent envelope, which can only be seen with difficulty owing to the fact that its refractive index very nearly approaches that of the fluid in which it is immersed. In my first paper, which is illustrated by photo-micrographs (1881), I say:

"When a culture tube containing bouillon made from the flesh of the rabbit, is inoculated with a minute quantity of blood taken from a rabbit recently dead, and containing the organism shown in Fig. 1 (a photo-micrograph showing it in rabbit's blood) is placed in an incubating oven at a temperature of 37° C., there is a rapid multiplication of the micrococcus, which, it is proved experimentally, retains its virulent properties. While in process of active multiplication the organism also retains, at least to some extent, its characteristic form as shown in Fig. 1, and presents the appearance of being surrounded by an aureole as already described. But in a limited amount of the culture fluid the process of multiplication by fission soon ceases.

"When the liquid is examined during the first few hours after inoculation, it is seen to be slightly opalescent and upon microscopical examination is found to contain, distributed through it, an abundance of micrococci, solitary, in pairs, and in short chains. At a later period (forty-eight hours) the micrococcus will be found chiefly at the bottom of the fluid in groups and zoöglea masses and without the transparent aureole which characterizes it, especially in the blood of the rabbit, during its active multiplication. . . . If a culture-fluid in which the micrococcus has been present in abundance be examined at a later date (one or two weeks), the organism will no longer be found, at least in a recognizable form; and, so far as my experiments go, the culture-fluid no longer exhibits any virulence when injected beneath the skin of a rabbit."

M. Pasteuri is not motile and does not, so far as known, multiply in any other way than by simple binary division. Its thermal death-point, as fixed by myself in 1881, is 140° F. (60° C.), the time of exposure being ten minutes. The facts that it does not grow at temperatures much below that of the human body, and that it requires for its development a neutral or slightly alkaline culture-medium, and is quickly destroyed in fluids undergoing putrefactive decomposition, indicate that it is a true parasite, in the human mouth or elsewhere, and that it is unable to maintain a saprophytic existence externally to the bodies of warm-blooded animals.

In my experiments on disinfectants in which this micrococcus

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served as the test organism, made in Baltimore in 1881 (l. c.) and in San Francisco in 1883 (l. c.), I obtained the following results:

Mercuric chloride: 1 part in 20,000 destroys the vitality of the micrococcus in bouillon cultures, and 1 part in 40,000 arrests development.

Iodine, dissolved by potassium iodide: 1 : 1000 destroys vitality; 1 : 4000 arrests development.

Sulphuric acid: 1 : 800 destroys vitality; 1 : 1600 arrests development.

Carbolic acid: 1 : 500 destroys vitality.

Zinc chloride: 1 : 100 destroys vitality.

Alcohol: 25 per cent. required to destroy vitality.

Salicylic acid, 4 per cent.; sodium hyposulphite, 8 per cent.; ferric sulphate, 16 per cent.; boracic acid, 4 per cent.; sodium biborate, 4 per cent., and sodium salicylate, 4 per cent., were found not to destroy vitality. The time of exposure in these experiments was two hours.

In my experiments made in Baltimore (1881), in which the blood of a rabbit recently dead from an inoculation with material containing this micrococcus was subjected to the action of the disinfecting agent for half an hour and then injected into another rabbit, I found that certain chemical agents—sodium hyposulphite and alcohol—when mixed with the septic blood modified its virulence without destroying the vitality of the microörganism; and that the inoculated animal recovered after such an inoculation and was subsequently immune from the effects of the unattenuated virus. I believe that the experimental evidence here referred to is the first recorded with reference to the attenuation of virus by chemical reagents. This fact is recognized by the French author Vallin, in his *Traité des Desinfectants*, published in Paris in 1882 (p. 222).

On the surface of agar jelly, *M. Pasteuri* forms a slightly elevated, nearly transparent growth, and in "stick-cultures" in the same material grows to a limited extent along the track of the needle, forming a nebulous line.

The results obtained by Fränkel with reference to the influence of various temperatures on the pathogenic power of this micrococcus are as follows: In fluid media a temperature of 42° C., maintained for two days, suffices to neutralize the virulence of the culture. The same result is obtained at a temperature of 41°,

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maintained for four or five days. Between 39.5° and 40.5° the virulence is no longer abolished, but it is so far modified that inoculations no longer give rise, in the rabbit, exclusively to the typical condition of the blood and enlarged spleen of septicæmia, but simultaneously to an intense localization of the virus in the serous membranes of the heart and lungs.

Netter has shown that rabbits which recover after receiving an injection of saliva containing this micrococcus are subsequently immune from the form of septicæmia to which it gives rise. According to this author, the saliva of convalescents from pneumonia during the first two or three weeks is less virulent than that collected at a later date, and animals inoculated with it usually recover and are subsequently immune. Fränkel, also, found that the micrococcus, although still present in the sputa of convalescents from pneumonia, no longer presents the same degree of virulence, and that death may occur as late as the sixth day after the inoculation is made, instead of within twenty-four to forty-eight hours, as is the case when the rusty sputum of acute pneumonia in injected.

NAMES.

The writer first named this microörganism *Micrococcus Pasteuri*, in a paper published in the *American Journal of the Medical Sciences* for July, 1885. This name has generally been adopted in this country, and is used by recent English and French authors, but the German authors have not accepted it. Thus Flugge briefly describes it under the name "*Bacillus septicus sputigenus* (Fränkel)," thus ignoring all the work which had been done upon it prior to the time that Fränkel commenced his researches. Biondi,[1] following Flugge's classification, calls it "*Bacillus salivarius septicus.*"

Fränkel speaks of it as the "Micrococcus of sputum septicæmia," or as the "lancet-shaped pneumonia-coccus."

Weichselbaum and other German authors frequently speak of it as "Fränkel's pneumonia-coccus" or as the "diplococcus pneumoniæ." Gamaléia, recognizing it as a streptococcus, as the writer had done previously,[2] calls it "*Streptococcus lanceolatus Pasteuri.*" I do not object to this modification of the name which I felt myself authorized to give to this much-named microbe in 1885, and which

[1] Zeitschrift für Hygiene, Bd. 11, 1887, Heft 2, S. 194.

[2] See my paper in the Journal of the Royal Microscopical Society, June, 1886, p 396.

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has all the rights of priority. But I do object to the designation "Fränkel's diplococcus" or "Fränkel's pneumonia-coccus," which so many German writers have seen fit to apply to it. While I fully recognize the value of Fränkel's contributions to our knowledge with reference to its presence in pneumonia exudate, etc., I must insist that Talamon deserves the credit of having first produced typical lobar pneumonia in rabbits by injecting this micrococcus through the thoracic walls. We have most positive evidence of this fact in the quotation already made from the work of Prof. Germain Sée, published in Paris in 1885. If, therefore, it is anyone's pneumonia-coccus it is Talamon's. And in view of the fact that I discovered it in 1880, photographed it and described its morphological characters in 1881, and made extended researches relating to its physiological characters, resistance to heat, to chemical agents, etc., in 1881 to 1883, I think I may properly object to its being called "Fränkel's diplococcus" or "Fränkel's micrococcus (or bacillus) of sputum septicæmia."

Having thus briefly reviewed the history of our knowledge with reference to this interesting microörganism, and shown the nature of the evidence upon which it is claimed by several competent bacteriologists to be the infectious agent in acute pneumonia, I must leave the subject for your consideration and for further experimental investigation.

DISCUSSION.

Dr. A. L. Loomis, of New York: I saw my name on the programme stating that I would discuss this paper of Dr. Sternberg's, but I must confess that I am not prepared to discuss such a paper. It is exhaustive in the line of the bacteriology of pneumonia, and should be discussed by an expert bacteriologist, which I am not. I shall confine what remarks I have to make to the simple, plain, everyday question of the etiology of pneumonia, and shall discuss it from a clinical rather than from a bacteriological standpoint.

No person, I suppose, who has seen much of pneumonia (croupous or lobar) has not come to the conclusion that there are certain conditions which must exist prior to its development; that the disease has predisposing causes. When we come to study them we find that they are many. It is to be observed that pneumonia occurs in a certain number of infectious diseases, so-called. We observe, also, that it occurs in those who are under the influence of alcoholism. We find it in persons who have malarial infection, the infection of sewer gas, and all those

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conditions which lower the vitality. Therefore, whatever view we may take of the microbic origin of pneumonia, we must accept the position that certain states of the human system must exist before it will develop. That is true, call the infective agent what one will. When those conditions are present, it is possible for pneumonia to be developed by certain states of the atmosphere; it may be by the presence of a microbe in a certain class of cases. For instance, in epidemic pneumonia there must be some widespread exciting cause, and I see no reason why it should not be a specific microbe, if this can be looked upon as at all a common cause of disease. But it does not seem to me necessary that there shall be for all cases of pneumonia but one kind of microbe as the exciting cause. If a man has pneumonia in connection with diphtheria, if diphtheria is recognized as of microbic origin, I see no reason why the same microbe might not just as well be the cause of the pneumonia as of the patch on the throat. Again, a man who has typhus fever gets croupous pneumonia as a complication; it does not seem necessary to bring in the specific microbe described by the author in order to account for the pneumonia. There is already an infecting microbe in the system which may as well develop the pneumonia as the typhus fever. And thus we might mention the long list of diseases in which pneumonia occurs as a complication. A predisposing cause, however, is an absolute necessity. We do not now believe that bacteria will produce a disease unless certain predisposing conditions shall exist to favor their growth. If I receive the tubercle bacillus I resist it until I am in a certain physical state, and then I furnish the culture medium in which it may grow. The same is true of pneumonia, if it is due to a specific microbe or to any microbe. The question in my mind is, whether we are not conducting the discussion of the microbic origin of disease into too narrow a channel in trying to attribute a specific microbe to each disease, no matter what the circumstances which attend its development. From a clinical standpoint that seems to me to be a fault, and it is the cause of so many different opinions regarding the etiological influence of microbes. As I said before, if there is a microbe which is capable of producing a diseased process of one order, and a pneumonia develops in connection with that diseased process, I see no reason why the microbe which produced the original disease should not produce pneumonia.

With regard to the presence of any given microbe in all cases of pneumonia, as far as our observations have gone in the laboratory, it is absent quite often.

Dr. Thomas E. Satterthwaite, of New York: I do not feel prepared to discuss this question, for I cannot criticise Dr. Sternberg's work as one competent to form an opinion of its quality; in fact, I see

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no reason why I should have been requested to discuss the paper, except that I have lately been reviewing the subject of lobar pneumonia. Unfortunately, I am in the position of one who has not been able to find out much about its cause; lobar pneumonia is the most difficult form of pneumonia to understand, so far as etiology is concerned. All the other varieties are comparatively simple—that is, broncho-pneumonia in children or adults, embolic pneumonia (on which I read a paper yesterday), interstitial pneumonia, and other pneumonias, like the syphilitic. But the type under discussion is extremely difficult. So far as I have been able to learn, there are but two causes that seem to have any prominence. One is exposure to cold, or a peculiar atmosphere; the other, infection.

In my own experience I have found that lobar pneumonia was ascribed to cold in 22 per cent. This accords with the popular opinion held by the laity and many physicians, and is founded on good ground. Exposure to a certain degree of cold is followed pretty certainly by lobar pneumonia of the acute type in certain persons. But, as Dr. Loomis has said, and Dr. Sternberg also, there must be a predisposing condition in the system of the individual before cold, if cold be the cause, can produce pneumonia. Now, what that condition is, we do not know exactly. But we know pretty positively that it is a lowering of the vital forces, a deterioration of the individual, that may be brought about in a variety of ways. If the physical condition is kept up to a high standard, and the person is exposed to this certain degree of cold, he does not take pneumonia; but if he is deteriorated, and is exposed to this same kind of cold for a length of time (usually cold with moisture), he will take pneumonia. It is not usually dry cold or a brief exposure to cold. Such are my ideas on the subject.

Then we come to another and a more important question which Dr. Sternberg has discussed so minutely, viz., the question of infection. I think we shall all arrive at the conclusion eventually that acute epidemic pneumonia must be ranked among the infectious diseases. I refer to that form of pneumonia which Dr. Sternberg has mentioned as occurring in barracks, prisons, particularly where filth exists. There have been a great many different accounts given at various times of this form of pneumonia, but until recently, it seems to me, there has not been very good evidence in its favor. The individual must have a certain deterioration of the system, however, before he will take on the disease. It is generally seen in persons of low physical tone. But it does not follow that if the disease is infectious, it is necessarily due to a microzyme, although the evidence cited by Dr. Sternberg shows that with it there is frequently associated a certain bacterium. I have seen

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it in a number of instances, but in others I have not seen it. And I have not seen it with the degree of regularity in lobar pneumonia that we ought to expect. But when one considers that there are several bacteria, all claimants for the causation of the disease, this is not to be wondered at. It seems to me, indeed, that it is quite likely that different forms of microzymes may produce it. Yet with reference to this point, I do not feel that I can speak with any degree of authority, for I have not done the work accomplished by Dr. Sternberg. His work has been of very excellent quality, and we should fully appreciate it; indeed, I believe that it has been as good as that done by any laborer in this field anywhere. I would say, however, though not in a critical or captious spirit, that the experiments of Talamon, to which Dr. Sternberg has alluded, and which seem to have been the best that have been done, were not, it seems to me, as thorough as those of Friedländer. Talamon worked in France, discovered a germ, cultivated it apart from the body, and injected it into animals, but, judging from Dr. Sternberg's paper and what I have read, he did not pursue a very scientific way of determining whether this germ was the cause of the pneumonia. For example, he injected his lung through the thorax, but the injection of a lung through the thorax, by sticking the nozzle of a syringe into it, will always cause a pneumonia, whatever fluid may be employed. What one ought to do in these cases, and perhaps Dr. Sternberg has done it, is to stick closely to the law laid down by Koch. His law is divided into three sections: (1) First, he says, find the germ; then (2) cultivate it outside of the body; (3) inoculate it on a part of the body not to be the seat of the disease. Now, in the case of pneumonia, the suspected germ should not be injected directly into the lung, for in that event pneumonia would develop in any case. It should enter the blood current at a distance from the lung, and if acute pneumonia be an infectious disease with a local manifestation in the lungs, we should expect lobar pneumonia to follow.

Dr. William Hailes, of Albany, inquired of Dr. Sternberg in what way the micrococcus, to which he attributed pneumonia, gained access to the lungs. He also mentioned some of the difficulties which confronted the student of bacteriology in his investigations, such as the minute difference in shape, size, and behavior in culture media of a presumably specific bacterium.

Dr. A. N. Bell, of Brooklyn: I would like, before making a motion, to say a few words. I need hardly say that I have been intensely interested in the paper of Dr. Sternberg's. Like a good deal of other work which he has done, it bears the evidence of progress in bacteriological research. It is now forty-six years since I saw an epidemic of pneumonia, but I have stated on different occasions my

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belief in the zymotic origin of pneumonia, both before this Society and in a paper read before the American Public Health Association at its meeting in New Orleans, and elsewhere. I state this the more readily after having heard to-day the views of a distinguished teacher on the predisposing causes of pneumonia. A better definition of what may be called that predisposition is, I think, the following: Our susceptibility, so-called, to the germs of infectious disease, is in inverse ratio to our power of resistance to such germ.

I move that the thanks of the Society be extended our invited guest, Dr. Sternberg, for his valuable paper. Carried unanimously.

Dr. Sternberg, in closing the discussion, said: Mr. President—as to the remarks of Professor Loomis, with reference to the *à priori* probability that several different microörganisms might produce pneumonia, and that in cases of secondary pneumonia the cause might be the specific agent of the original disease, I admit the force of those remarks, yet the experimental evidence all seems to indicate that in secondary pneumonia, as well as in primary pneumonia, this particular micrococcus is found in the majority of cases. Until the recent researches of Gamaléia, the observations of the Germans, as of Weichselbaum and Fränkel, seemed to point to more than one microörganism, for they did not find this particular one in all cases. But it could hardly be expected that it would be found in all cases. Gamaléia is the author whom I quoted as having last worked over the entire subject, reviewing the labors of others, and he claims that it is present in every case, and believes that where it has not been found it was due to faulty experiments. More extended observation is necessary. If one takes a considerable amount of the rusty sputum of pneumonia and inoculates the mouse, and the mouse dies, there he will find a more satisfactory test. The observations of very careful men go to show that this microörganism is very commonly, and almost constantly, present in the rusty sputum in croupous pneumonia.

With reference to Dr. Satterthwaite's criticism of Talamon's methods, he is under a misapprehension. Talamon did not make his inoculations of culture mediums. At that time the more recent methods of culture medium were not known. Talamon injected the pneumonic exudate directly, and the result was a fibrous pneumonia which Germain-Sée pronounced typical.

With regard to the objection that the injections were made into the lung tissue, it is a fact that subcutaneous injections give rise to a local process, and animals which have susceptibility show a fibrous exudate at the point injected, but not a pneumonia. Pneumonia is a local process, and all experiments show that injections made directly do not induce that disease.

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With regard to how infection takes place, the question raised by Dr. Hailes, if the microörganism is in the mouth, and the predisposing qualities are present, vital resistance having been lowered, the only channel for entrance need be the respiratory passages. The portion of my paper which I omitted to read referred to that question.

II. Views on the Prevention and Treatment of Typhoid Fever.

By STEPHEN SMITH BURT, M.D.,
PROFESSOR OF CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

During the last three months of the year just passed there were 413 cases of enteric fever reported in the City of New York, including 122 deaths; and in Providence, R. I., there were 329 cases and 70 deaths recorded within the same period.

In recounting these statistics I do not so much seek to point a moral in regard to the percentage of deaths as to draw your attention to the many instances of this fever that have been noted in the short space of three months in two of our large Eastern cities, where the intelligence of the inhabitants is certainly not below the average of such places.

From our knowledge of human nature we are justified in concluding that all the cases that occurred during this period were not reported, while, at the same time, it is reasonable to suppose that most of the fatal results were ultimately put on record. And, if these inferences be true, we can easily see how there would be considerable room for error in calculating the ratio of deaths from such reports. But, on the other hand, it is fair to presume, after due allowance for mistakes in diagnosis, that the actual number of cases was in excess of what appears in the statistics.

Now, this evident persistence of typhoid fever in enlightened communities where it should not prevail, to say nothing of the apparently high rate of mortality, which is possibly somewhat fallacious, has led me to consider the facts in regard to the spread, prevention, and treatment of this affection.

Although the topic that I have selected is certainly of great general interest, yet my treatment of it may seem rather trite to many

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of you because of a contingent lack of novelty. Still, I hold that a thing is but half known which is not generally acted upon, and if we would learn what men believe we must observe what they do.

Typhoid or enteric fever is a preventable disease and quite a needless affliction to the human race. Nevertheless, each year we are called upon to grapple with this malady, and the idea of its extinction is regarded by many as fanciful instead of reasonably feasible. The fault must lie partly with ourselves, and not wholly with the rest of the community. Moreover, it is not so much ignorance that we have to plead as a lack of sufficient will to live up to what we know.

If the germ theory of disease is a correct one, and it would seem to be, we ought to follow the example of the surgeons and endeavor to keep out the bacteria. Our task, to be sure, is a much more difficult one than theirs, for these little enemies of the human race come clothed in the garb of peace, and steal into our citadels by the natural paths. The brain of man, however, nurtured by experience, each day finds itself better able to solve this problem.

Enteric fever is not contagious in the strict sense of the word, but rather infectious, if such a distinction is allowable. That is to say, it is indirectly conveyed by means of excrementitious matter, but not communicated directly from person to person. A rod-shaped vegetable parasite, discoverable only by the microscope, of the genus bacterium and species bacillus, is the disease germ of this malady. From the evacuations of a patient, after a few hours, these germs multiply, spread, and, what is more, retain their virulent activity for a great length of time and under the most varying circumstances. Yet because of a considerable interval between the passing of a stool and its final putrefaction, at which time the poisonous ptomaine is evolved, immediate contact with the patient is rarely, if ever, a means of infection.

In such a number of instances of careful search by painstaking and trusty observers has an eruption of typhoid fever been traced to a source that plainly owed its infection to a previous outbreak of the same disease, that this deduction regarding its origin has been verified and the sequence of cause and effect established. Unpolluted by man, the earth is free from the germs of enteric fever; but, criminally careless or ignorantly neglectful, he scatters the seeds that generate misery and entail suffering upon his fellows.

So far as contagious and infectious diseases are concerned, the

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public weal might be fitly compared to the strength of a chain, which is no greater than that of its weakest link. Hence the importance of boards of health, of inspection, and of quarantine, to enforce the law upon the few for the safety of the many. But short of flagrant disobedience to sanitary rules, there are many minor infringements that work no little injury, for, after all known precautions have been observed, one may be subjected to the mercy of a thoughtless or selfish neighbor. Consequently, until it is not only granted, but, furthermore, acted upon, that the welfare of our fellow-men is also our own, unnecessary disease and premature death will be the lot of mankind.

The poison of enteric fever is undoubtedly due to living germs that are voided by the patient, which multiply with great facility under favorable circumstances, and which are preserved, it is believed, for years in a congenial atmosphere. Thus, wherever these germs are scattered they form colonies of great potency for evil. Little fine particles, too small to be seen by the naked eye, they are borne by the wind, diffused by gases, or conveyed by means of fluids in various directions. And the victim of their noxious power, predisposed in some way not well understood, takes them into his system through the air he breathes, the fluid he drinks, or the food he eats.

In certain portions of the world the struggle for existence between man and vegetable and animal parasites is so great as to render these regions almost uninhabitable. Indeed, at all times and in all places the price of life is continual watchfulness. And the person who relaxes his vigilance is daily in danger of being carried off by the enemy that lurks among us in microscopic tenuity.

It is pretty well established that the gaseous emanations from sewers, or the water that may be polluted by human excrement, however pernicious, will not produce enteric fever when taken into the system unless they contain the germs or toxic principle peculiar to this malady.

Perhaps of all means of propagating enteric fever our drinking-water is the most common, because the most likely to reach large numbers of persons. Bright, sparkling, and clear, it may still be the vehicle of endless infection. Ice, too, harbors the bacilli characteristic of this affection. These same germs of disease when cast into a public sewer find suitable pabulum for growth and multiplication, whence they spread to the houses by means of the constant

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diffusion of gases. By the overflow of vaults or the leakage of pipes they saturate the earth and ebb and flow in the tide-water of the subsoil, from which they find their way into adjacent wells and poison the water, or into neighboring cellars and vitiate the atmosphere. Even the milk we drink is liable to pollution from its strong affinity for water in the laboratory of unscrupulous purveyors. Therefore, while the surgeon, armed with antiseptic weapons of defence, stands guard over his wound, we have literally to scour the country in search of the foe.

As a means of stamping out this infectious disease, first of all comes the absolute need of destroying in every instance the excreta, or the germs therein, as they are expelled from the patient. This is not only a moral obligation, but it should be made a legal necessity. Then, when as much attention is given to the plumbing, draining, and ventilation of a home as, in many instances, is bestowed upon decoration, the dreadful scourge ought gradually to disappear.

In the selection of a house in town or country the water-supply and the drainage should be made the objects of the most careful investigation, for these are the two sources most liable to become vehicles of infection. Stationary basins should be excluded from all sleeping-rooms, and the waste-pipes in every case should be exposed to view and not buried in the walls or floors. It would be better if the bath-rooms and closets were in a detached portion of the house. Filtered rain-water is the safest for drinking-purposes, and the ice employed to cool it should not come into immediate contact with the fluid. Wherever there is the slightest danger of pollution the only safe means for the prevention of infection is to boil the water. Simple filtration will not destroy disease germs, but, if raised to the boiling point, water is freed from all bacteria, however tenacious of life. In like manner meats and food in general should not be kept in direct contact with ice, nor even in the same compartment. And the outlet of a refrigerator must not communicate with a sewer. All this we know, you say; but do we act upon our knowledge? Do we take pains to see that our patients are as well informed, and that they make proper use of the information? The periodical outbreaks of enteric fever would seem to answer this pertinent question.

Unless these simple precautions are taken in every instance, we have to thank ourselves for the weeks of illness, and perhaps years

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of sorrow and regret, that we bring upon ourselves by our own negligence.

Finally, after all has been done that our present knowledge enables us to perform in the way of prevention, there may come a lapse of caution, a blind, foolish trust that things will take care of themselves, or some stupid member of the community, far removed from our supervision, may subject us unknown to the poison of enteric fever, and we fall victims to the malady. Hence, in the present state of imperfection in which we exist, we are obliged to consider the treatment of this disease, which, as I have already ventured to claim, ought not to prevail and would not be the scourge it is but for our own improvidence.

It would be hazardous to predict, in view of the apparent revolution in medicine that the germ theory seems destined to bring about, that some material may not be discovered which, introduced into the system, will counteract the poisonous effects of these germs. But at present the indications point to the much more natural, not to say rational, method of exclusion; and, although this involves an amount of care and watchfulness that is often irksome, nevertheless it would appear to be the course that is generally required in life, for without labor nothing is given to man.

I am wholly in accord with those who believe that the pyrexia of typhoid fever is, in a degree, a conservative process.

Fever may be defined as an exaggeration of the normal physiological heat-production and heat-dissipation, but with the heat-regulating mechanism thrown out of gear. The neurotic hypothesis of pyrexia seems to have been verified by the demonstration that heat-production is controlled by the nervous system. Chemical changes that take place in the glands and muscles, which give rise to heat, are directly dependent upon innervation. An injury to certain limited portions of the brain, known as heat centres, will produce fever; and in like manner the injection of pyrogenic substances into the circulation is supposed to have a similar influence upon the central nervous system. Thus the typhoid poison taken into the blood provokes an elevation of temperature by its effect upon the heat areas, unless the central nervous system should be so overwhelmed by the toxic products of the bacilli as to become paralyzed.

When fever is produced it slowly causes oxidation of the foreign substance, but, like many another energy, it is potent for evil as well as good, and must be kept within bounds. On the other hand,

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without fever the malady may still be a malignant case of typhoid poisoning. Hence pyrexia is not all of enteric fever. It is rather the combination of pyrexia with the poisonous element than the elevation of temperature alone that is harmful; for it has been demonstrated that a gradual rise of bodily heat, not septic in origin, can progress to a very considerable height without much permanent damage to the tissues. Consequently the question occurs whether too much attention is not being given to the dangers of what is supposed to be hyperpyrexia, and not enough to the other factors of the malady.

This fever is undoubtedly one of the manifestations of Nature's struggle to rid the system of the unwelcome poison, and in the milder cases of infection the human economy proves itself equal to the occasion, yet in many instances the toxæmia is so profound that the patient sinks under its baneful influence. But between these extremes there lie many stricken with this affection whose fate hangs upon threads that may be rudely torn by blundering hands or gently gathered up by the spirit of enlightenment.

We have no specific with which to combat this disease, and the indications for treatment are to supplement Nature in her endeavor to accomplish this end. I do not wish to appear as an advocate of expectancy to the exclusion of all else; nevertheless, it is very desirable to have the moral courage not to produce an unwarrantable disturbance in the system, with the vain hope of hastening a process about which Nature requires her own time. Therefore, I would earnestly testify in favor of the simpler therapeutic measures, and simplicity, after all, is an evidence of the highest evolution of our art. The peculiar intestinal lesions of this malady demand absolute recumbency, even though the general prostration is not sufficient to enforce it. Fresh air in abundance, without draughts, is a prime factor in its management. It is my conviction, however, that, except for the most urgent and dangerous complications, any medicine that disturbs the stomach had better never be administered. Pure milk is the best food. Solid material should not find entrance into the body until the fever has subsided, and, what is more, until the intestinal ulcers have healed, which is further on. This should be impressed upon the attendants and the reasons given, and, furthermore, the warning should be repeated in those dangerous days of convalescence. Predigested milk is the most suitable form in which

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to feed the patient, but it is important to remember that milk is food and not adequate to quench thirst.

Alcohol is one of our powerful allies in the treatment of almost all diseases upon occasion, yet it may in many instances be withheld with benefit. It is the condition of each individual and not the disease that must determine its employment. The rapidity of the pulse in enteric fever is supposed to be directly due to the pyrexia; still, with low tension, and possibly dicrotism, we are feeling the effects of the typhoid poison. Auscultation of the heart, to learn the quality of the first sound, should be daily practised, as herein lies our best guide for the use of stimulation. Weakness of the first sound calls for aid.

As an instance of deference to the indications of nature I would cite the employment of opium in cases of intestinal hemorrhage, which insures absolute quietude of the intestines while coagula have time to form in the bleeding vessels.

The importance of guarding against bedsores by the early use of a water-mattress is great, for it is easier to prevent these ulcers than to heal them. Moreover, a frequent change of decubitus to avoid hypostatic congestion of the lungs should not be overlooked.

In the choice of means to reduce the temperature of the body a very difficult and delicate problem is presented to the thoughtful observer. I would strongly recommend the medical attendant to weigh well the question whether it is not better to allow the fever considerable latitude than to reduce it at the risk of destroying the patient's inherent power of resisting the chemical poison, which is at the bottom of the whole matter.

If quinine has an antipyretic effect in typhoid fever, it seems to me the amount required to accomplish this end is often harmful.

Antipyrine, while it may reduce the temperature, is productive of so much cardiac weakness that it is a serious problem whether it had better ever be administered in enteric fever.

The application of cold water in the form of a tub-bath, even when carried out with the utmost caution, by the gradual lowering of the temperature of the water, is very liable to produce prostration if not collapse; and the final return, in some instances, of the same or a higher bodily heat would seem to show that, although the surface is cooled, and even more than the surface, heat-dissipation is checked for some time afterward, while heat-production continues undisturbed in the deeper structures. At all events,

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whether this supposition be true or not, my experience with tubbing in typhoid fever leads me to exercise a great deal of caution in the selection of cases for its employment. But, on the other hand, the milder expedient of sponging with tepid water appears to be almost always followed by an improvement in the general condition of the patient, and never by any of the ill effects that are so prone to succeed a tub-bath.

Before closing I would like to mention the 307 cases of enteric fever of Dr. Cotting, of Boston, spoken of in Flint's *Practice of Medicine*, that were treated without drugs of any kind, wherein there was a mortality of but ten per cent.; and likewise the celebrated exploit of Alonzo Clark, in the treatment of 250 cases of typhus fever, at Bellevue Hospital, with a moderate amount of stimulation, and naught else but food and drink and fresh air in great abundance. They all ended in recovery.

Such facts as these ought always to be remembered when, in the enthusiasm of the moment, we are quick to ascribe some special virtue to our latest therapeutical venture.

Finally, the main points that I would emphasize in this necessarily brief survey of my subject are that, as a race, we are responsible for the existence of enteric fever, that its extinction lies in our own hands, and that in the treatment of the disease we should be ever mindful of our limitations.

III. Diseases of the Circulatory System occurring in connection with Typhoid Fever.

By EUGENE BEACH, M.D.,
GLOVERSVILLE, N. Y.

It has been my experience to meet with four cases of thrombosis of the femoral veins, with more or less accompanying phlebitis, during typhoid fever or the convalescence therefrom. Conversation with physicians indicates that this is a comparatively infrequent complication of that disease, and examination of the more common text-books gives the impression that the literature of the subject is not abundant. From references the result of my own study and others for which I am indebted to Dr. W. G. Macdon-

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ald, of Albany, I find that phlebitis, arteritis, endocarditis, pericarditis, thrombosis, embolism and infarctions, with their results, have been observed and mentioned as occurring in connection with typhoid fever.

Rosenstein says that endocarditis has been observed in a few cases of typhoid, but myocarditis occurs more frequently. Bauer says that pericarditis is rare. Similar opinion is expressed by Liebermeister.

Barie, in *Revue de Médecine* for January and February, 1884, called attention to the frequency with which acute inflammation of the arteries occurs as a sequel of typhoid fever, and gives the symptoms as follows, viz., pain more or less sudden in onset directly over the course of the vessel, increased by pressure or movement, diminution and then absence of pulsation, swelling without œdema or redness, bluish mottling of the surface, local fall of temperature, though rarely the local temperature is elevated, disorders of sensation, as formication and anæsthesia, and the appearance of a hard painful cord. Mettler, in the *Philadelphia Medical Times*, vol. xvii., described a case of arteritis complicating typhoid fever. A. Martin, in 1881, reported a case in which the cervix uteri with the upper part of the vagina sloughed, and Spillman in the same year called attention to the occurrence of gangrene of the vagina and vulva in cases of typhoid fever.

Phillips reported in the London *Lancet*, 1885, a case of general phlebitis occurring during convalescence from typhoid fever, in which both lower limbs, and the superficial veins of the abdomen, were affected. The patient recovered after a tedious convalescence, with the most happy result of curing the varicosities of her limbs. Dr. Porter (*Transactions of Connecticut State Medical Society*, 1884) reports five cases of phlegmasia alba dolens, sequelæ of typhoid fever, all ending in recovery. Guillon (*Gazette de Méd. de Nantes*, 1883) reported a case of phlebitis of the femoral vein followed by gangrene and death.

E. G. Cutler says that thrombosis of the pulmonary artery may occur in typhoid fever, and James H. Hutchinson speaks of arterial thrombosis as of occasional occurrence. He quotes several cases in which gangrene of the leg, hand, or cheek was observed, and among others one in which sphacelus, depending upon obstruction of the carotid artery, the result, as Patry thought, of arteritis, commenced in the left ear and extended to the forehead and cheek.

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Hutchinson speaks of venous thrombosis, the result of weakness of the heart's action, and usually affecting the veins of the lower extremities, as more frequently observed. All cases falling under his own observation ended in recovery. Murchison collected 17 cases of venous thrombosis with 3 deaths, but says the death was due in no case to this complication alone Liebermeister reports, as occurring in the hospital at Basle, 31 cases of thrombi in the veins of the lower extremities among 1,743 typhoid fever patients the majority being among men; out of the 31 cases 2 proved fatal. Macdonald, of Albany, collected from the *Index Medicus*, both foreign and American cases, 19 others with 3 deaths. My own cases are 4 with no deaths, and Dr. D. V. Still, of Johnstown, reports one case which recovered. Thus we obtain an idea that the prognosis as to ultimate recovery in venous thrombosis of the lower extremities is favorable, eight of the seventy-two cases proving fatal. Liebermeister and Hutchinson speak of the possibility of death occurring from embolism of the pulmonary artery by detachment of a portion of the thrombus. In this connection, it will be interesting to bear in mind, how frequently pneumonia has been observed to complicate typhoid fever. Liebermeister also says gangrene of the lung may follow hemorrhagic infarction produced by embolism.

Thrombosis of the heart is mentioned by Leduc and Duncan as occurring during the third week of typhoid, and they say that even when large it is not necessarily fatal. It is often fatal by being a source of pulmonary, hepatic, splenic, cerebral, and other embolism. It is said to be rarely recognized.

Beaumonoir, Patry, Hayem, and Trousseau refer to cases of embolism of the arteries of the lower extremities. Beaumonoir reported a case in which both legs were lost by gangrene, the patient, a child, recovering. A case in the service of Dr. Sumner, Boston City Hospital, proved fatal from embolism of the right axillary artery and gangrene of the arm on the fourth day. In the case reported to this Society in 1885 by Dr. Tuthill, of Poughkeepsie, amputation of the leg was necessary after several months.

From the authorities quoted, it appears that thrombosis may be either a complication or a sequel of typhoid fever. It arises from a weak state of the circulation and from conditions of the blood rendering it liable to coagulate. It may occur as early as the ninth day, or when convalescence is well under way. It occurs most frequently in the veins of the lower extremities. The order of fre-

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quency has been observed as follows: First, the femoral veins; second, the saphenæ, and third, the popliteal. It occurs more frequently in men than in women, and oftener on the left side than on the right, and is more liable to occur late than early. It may occur in both legs at once, as it did recently in a case of this writer's.

Thrombosis and phlebitis are liable to be coincident, the former resulting when the inner coat of the vein is undergoing inflammatory action. The fact that the complication is more liable to occur late in the disease favors the prognosis. A fatal result is due to gangrene, periphlebitis and pyæmia, and pulmonary embolism.

Hemorrhagic infarction, more or less extensive, may occur in the lung, due to embolism of branches of the pulmonary artery, and may lead to gangrene. Infarctions of the liver and spleen are not infrequent complications of typhoid fever.

IV. The Treatment of Typhoid Fever.

By SIMON BARUCH, M.D.,
ATTENDING PHYSICIAN TO THE MANHATTAN GENERAL HOSPITAL AND THE NEW YORK JUVENILE ASYLUM.

I DESIRE to confine my remarks to the treatment of typhoid fever, because I have recently revised my experience, with the result of reaching some decided views, which differ radically from those advocated here to-day, as well as from those entertained by the profession generally in this country, and, up to a recent period, by myself also. These views are the result of mature deliberation and sifting of evidence afforded by clinical and experimental data obtained from various sources and compared with my own.

The various methods of treatment advocated during my professional career of thirty years are doubtless familiar to you. About ten years ago I had settled upon the Ziemssen graduated cold-bath treatment as the most promising, and I obtained more satisfactory results from it than from any other. Still, when other antipyretic methods came into vogue, with so much promise of success based upon the idea that the reduction of high temperature was the chief desideratum, it was natural for me to be carried away upon the tide which so completely swept over the profession, especially as the treatment by cold baths involved so much trouble, and proved so

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disagreeable to many patients and their friends. Gradually the milder forms of bathing, by wet-pack and sponging, with quinine, thallin, kairin, antipyrin, the ice-coil, and later antifebrin and phenacetin, have assumed potent sway over the profession.

A review of my experience in the last decennium, derived from personal observation in private and hospital practice, and in that of many colleagues, as well as from society discussions, develops the fact that the mortality of typhoid fever has not been reduced by the antipyretic method of treatment. I ask you to follow me carefully in a fair, conscientious, and exhaustive, yet brief, review of the results of the various methods in vogue during the past twenty-five years, and to compare it, as I have done for myself, with your own experience. You will then, I opine, agree with me that we stand to-day upon the threshold of a great epoch in the treatment of typhoid fever.

You have heard how fatal is typhoid fever at the present time, and I might offer you additional evidence by statistics I have gathered from the New York City Board of Health, from 1876–1885, during which time 7712 cases of typhoid fever had been reported, with a mortality of 3184, or 41.28 per cent. But as these statistics may be doubted by some, I will quote to you the mortality of typhoid fever in the New York hospitals, as stated by Dr. Delafield in 1885, which he has computed at 24.66 per cent. This mortality is even larger than that furnished by the recently gathered careful statistics in Germany, which show that, under the expectant treatment, of 11,124 cases the mortality amounted to 21.7 per cent. These statistics, to which others may readily be added, were they not sufficiently large, present to us the appalling fatality of typhoid fever under the now prevalent expectant, antipyretic plan, which seeks, by nourishing the patient, placing him in good hygienic surroundings, combating complications, and reducing the temperature, to conduct him to a safe issue. Much stress has, as you are aware, been placed during the past quarter of a century upon high temperature, as the predominating element of danger in typhoid fever. It has been claimed that parenchymatous degeneration of the heart, kidneys, and other organs was the direct result of prolonged high temperature, and the chief energy of therapeusis was expended upon this hydra-headed monster. This idea was indeed sustained by, if it did not originate in, the marvellous success of the cold-bath treatment, which Brand, of Stettin, brought before the profes-

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sion in Germany, and which was adopted, after some modification, by Liebermeister, the high-priest at the altar of antipyresis, as well as by Jürgensen, Ziemssen, and others.

The history of this special subject is indeed instructive, inasmuch as it illustrates how surely bedside experience will, sooner or later, demolish the most stately structures erected by theoretical reasoning. Brand never claimed that this bath treatment was chiefly directed against the high temperature. On the contrary, this was a secondary object with him. Liebermeister's criticism (*Handbook of General Therapeutics*, William Wood & Co., 1885) is at once its best exposition and the highest encomium of Brand's method. On page 15 he says:

"The work of Brand, which was published in 1861, ranks high above the level of the publications of the professional hydropathists of to-day. Still the author occupies pretty much the ground of Priessnitz. The preëminent importance of abstraction of heat is not sufficiently recognized; the main action of water is more that of stimulation," etc.

Now I propose to show that the standpoint of Brand is correct to-day, and that it is sustained by the most incontrovertible evidence of experimental study, seconded by clinical experience gathered from carefully recorded data. A few days ago I heard a faithful adherent of drug medication remark that it is singular how antipyretics are falling into disuse. Thinking men are, indeed, beginning to ask themselves the question: Has the introduction of these powerful antipyretics reduced the mortality of typhoid fever? Two years ago I answered this question in the New York Academy of Medicine, affirmatively, but I stated my belief that the small improvement was attributable to the comfort afforded the patient more than to the removal of danger from high temperature. To-day, after an exhaustive review of the whole subject, I am prepared to agree with Brand, that the only advantage from antipyretic medication seems to be that the patient is able to die with a nearly normal temperature. The fact that the statistics of private and hospital practice show a mortality reaching beyond 24 per cent. since the introduction and abundant use of antipyrin and its substitutes, proves their inadequacy. And the fact becomes more glaring when statistics of the cold-water treatment reveal the astounding reduction of mortality to 3.9 per cent. We have reached a point in the study of this subject, so wrought with deepest interest, when it is our solemn duty to pause, weigh the

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reasons of this enormous difference in the mortality, and to ascertain if it may not be reduced. The purpose of this effort is to establish the fact that this mortality may be reduced by adopting the cold-bath treatment, and that it may even be reduced, as Brand has reduced it, to 1 per cent.! Those who, like myself, have personally witnessed the fatality of typhoid fever in our city, may, as I once did, shrug their shoulders in doubt. But if you will follow me in a brief analysis of the reasons for the faith that is in me, I hope to convince you that this is not a chimera, but a substantial fact based upon the most reliable clinical data.

Brand offers the statistics of 19,017 carefully gathered cases of typhoid fever (*Deutsche med. Wochensch.*, 1887), which demonstrate that under the general influence of all kinds of cold-bath treatment, without, however, its strict enforcement, the mortality has been reduced from 21.8 per cent. to 7.8 per cent. But this is not all. As I have said in a recent paper read before the New York County Medical Society, Brand has obtained from twenty-three German and French distinctly designated sources, the reports of 5573 cases, statistical evidence which has not yet and cannot be controverted, and by which it is clearly shown that the cold-bath treatment originally recommended by him has reduced the mortality to 3.9 per cent. The latter, however, still contains many imperfectly managed cases. Eliminating these, the number treated strictly by Jürgensen, Vogl, Brand, and others, up to January, 1887, amounted to 1223 cases, of which 12 died, a mortality of 1 per cent. And yet this is not all, for the most significant fact deducible from these statistics remains to be told. Not a single one of these twelve deaths occurred in any case that came under treatment before the fifth day.

Brand boldly asserts, on the strength of these 1223 cases, of which he treated one-fourth in private practice, the remainder coming from Jürgensen's hospital at Tübingen, Vogl's at Munich, and the military hospitals at Stralsund and Stettin, that all cases of typhoid fever coming under treatment before the fifth day should recover. Medical statistics are proverbially unreliable, but the exactness of the figures presented by Brand, in his able polemic in the *Deutsche med. Wochenschrift* for 1887, cannot be doubted, nor the deductions gainsaid, because they are furnished from civil and military life, from university clinics and military hospitals, in which the cases were observed by competent and well-trained men.

Valuable as these statistics must be as an argument in favor of

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strict cold bathing, the results of the latter are better illustrated by some comparative statistics made by several clinical observers. For instance, the official records of the Second Prussian Army Corps, quoted by Brand, show that while, from 1849 to 1866, the mortality among 1970 cases was 26.3 per cent., it was reduced, among 2711 cases of strict cold-bath treatment, to 4.3 per cent. This enormous reduction is the more glaring when this mortality of 4.3 per cent. is compared to that of other armies; in the French Army it was 32.2 per cent.; in the Italian, 28.6 per cent.; in the Austrian, 27.4 per cent.; and in the English, 23.8 per cent., during the same period. Indeed, so striking was the reduction of mortality wrought by this treatment in the German military hospitals, that the Prussian War Department deemed it incumbent upon itself to issue, on January 25, 1883, a circular to the medical service, in which it was urged that, inasmuch as the Brand treatment has been instrumental in reducing the mortality of typhoid fever in the various hospitals from 25 per cent. to 8 per cent., "we are justified in expecting that, with an increased perfection and more general adoption of this treatment, it may become possible to save a still larger number of sick men."

AVERAGE MORTALITY UNDER VARIOUS METHODS OF TREATMENT IN TYPHOID FEVER.

Reporter.	Source.	Treatment.	Number of cases.	Percentage of mortality.
Brand,	Various sources	Expectant	11,124	21.7
Delafield,	New York Hospital, 1878–83	Mixed expectant	1,305	24.66
Brand,	Various sources	All kinds of cold baths . .	19,017	7.8
Tripier, Bouveret, and Teissier,	Red Cross Hospital, Lyons:			
	1866–77	Expectant	229	26.2
	1873–81	Intermediate	629	16.5
	1882–87	Exclusive cold baths in severe cases.	376	6.9
	1887	Strict cold bathing . . .	139	5.0
Vogl,	Military Hospital, Munich:			
	1841–68	Without water, expectant(?)	5,484	20.7
	1868–81	Intermediate, with water .	2,841	12.2
	1875–81 (Second Division)	Baths and antipyretics . .	702	7.6
	1880	Strict cold baths	428	2.7
	1882–87	Strict cold baths	141	3.5
	1882–87 (Second Division)	Increasing baths and abolition of antipyretics.	144	4.1
Ziemssen,	Tübingen University, Clinic for 1877–87.	Graduated cold baths and antipyretics.	2,000	9.6
Naunyn,	Königsberg University Clinic	Strict cold baths	145	6.9
Brand,	Collected from various sources	Strict cold baths	2,198	1.7
Brand,	Same cases omitting those not treated before the fifth day.	Strict cold baths	2,150	0.0

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The preceding table, which I have gathered with care to exclude all unreliable statistics, presents at a glance the comparative merits of the various methods of treatment.

The above figures astounded me when I sought them out, and I trust they will impress the lesson they teach indelibly upon your minds.

But I do not ask you to accept this statistical evidence alone, although you will doubtless concede that never in the history of medicine have statistics of such magnitude, from such reliable and diversified sources, been brought to bear upon a question of therapeutics.

Let us divest ourselves of the empirical influence of mere figures, which, it has been said, may be marshalled in any cause to prove anything, and study the reason why the cold-bath treatment of typhoid fever is superior to the antipyretic expectant plan.

In the first place, the idea that high temperature is the chief determining cause of fatality in typhoid fever must now be abandoned. The sooner we cut loose from this bugbear the better for suffering humanity. I am glad that Dr. Burt has taken strong ground on this subject. Rather than enter upon an elaborate discussion of the present status of the question, I will refer you to the clear and sagacious review of the pathology of fever by Professor Welch, of Johns Hopkins University, in his Cartwright Lectures last spring. Study these lectures carefully, and you will find a cautious, painstaking weighing of all the evidence bearing upon the lethal influence of heat elevation in fever, sustained by experimental and clinical data that must be convincing to any unbiassed mind. He says, in summing up (*The Medical Record*, April 28, 1888):

"We find that animals may be kept at high febrile temperature for at least three weeks without manifesting any serious symptoms. The only functional disturbances which could be attributed directly to the influence of the elevated temperature were increased frequency of the respiration and quickened pulse. No definite relation could be established between the variations of arterial tension which occur in fever and the height of the temperature. Although the experiments narrated showed that prolonged high temperature is an element in the causation of fatty degeneration of the heart, they also indicated that other factors, such as infection, are concerned in the production of the lesion. Moreover, experimental evidence was found in support of clinical facts, showing that this alteration may exist without serious interference with the functions of the heart, so that the conclusion seems justifiable that failure of the heart's power, in fever, is *less* an effect of high temperature than of other concomitant conditions. The

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lessened perspiration, the renal disorders, and the digestive disturbances (with the possible exception of constipation), are referable also chiefly to other causes than the increased temperature. Both experimental and clinical observations strongly support the view, now widely accepted, that the disturbances of the sensorium, which constitute so prominent a part of the group of so-called typhoid symptoms, are dependent in a fair higher degree upon infection or intoxication than upon the heightened temperature. Although no attempt was made to analyze in detail the clinical evidence relating to the effects of high temperature, attention was called to the fact that the absence of all serious symptoms in many cases of relapsing fever, and in the so-called aseptic fever, in spite of prolonged high temperature, strongly support the conclusions derived from the experimental study of the effects of heat upon man and animals. Even in fevers, such as typhoid fever and pneumonia, where the height of the temperature is undoubtedly a most important index of the severity of the disease, there exists no such parallelism between the temperature and the nature and severity of the other symptoms, as we should expect if these symptoms were caused by the increased heat of the body."

I might offer you many clinical observations on this point, but two of these, from men whom you all know and honor, will suffice. In the discussion of a paper on antipyretics which I had the honor to read before the Section on Practice of the New York Academy of Medicine, the lamented Dr. Wesley Carpenter said that:

"With regard to heart failure and degeneration of the muscular fibres of the heart, I had an opportunity, in connection with the pathological department of Bellevue Hospital, to examine microscopically the cardiac muscle in a sufficient number of cases to make it quite evident that it did not occur with the frequency one might be led to expect from reading the writings of the German observers."

Dr. A. L. Loomis said on the same occasion:

"He was not certain, for he had been in the line of observations similar to Dr. Carpenter, that failure of the heart is due to parenchymatous degeneration, of which we have at times heard so much, and it had seemed to him to be due to failure in nervous supply as much as to muscular changes."

This is clear evidence from two pathologists and clinicians, which I might corroborate by other native and foreign testimony.

Since it may be now regarded as an established fact that high temperature, minus infection, does not produce those serious degenerations formerly ascribed to it, we must seek in the infective process, and the ptomaine-intoxication resulting from it, those deleterious effects upon the vital organs which undermine the system and eventually cause death in typhoid fever.

The cold-bath treatment yields the most triumphant results in

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combating these very effects of the infective and toxic agencies, with whose true entity we have not yet been brought face to face. It has been clearly demonstrated by numerous trustworthy observers that the reflex stimulus aroused by the shock to the extensive peripheral nerve-endings so energizes the nerve-centres which furnish innervation for circulation, respiration, digestion, tissue-formation, and excretion, that the system is enabled to tide over the dangers which would ensue from failure of these functions. This is the effect of cold bathing in a nutshell; the simple cooling effect on the blood occupies a secondary, though not unimportant, office.

The fact, as shown by Winternitz, Quinquand, and others, is that cold baths actually increase oxidation in health, and that while the skin is cooled and the bloodvessels contracted, the deeper structures are slightly increased in temperature and their vessels dilated. As the opposite condition, viz., dilatation of the arteries and superficial vessels, evidenced by the dicrotic pulse and loss of elasticity and contraction of the vessels, with diminution of the blood-pressure in the inner structures, are manifestations of the fever, the effect of the cold bath appears primarily to be directed against these manifestations, as has been demonstrated by Winternitz's sphygmographic investigations. The vivifying effect upon the nerve-centres referred to produces a vigorous cardiac action, which is evinced by the slower and more regular pulse and an improved tension of the vessels; it improves the appetite and digestion, enabling us to enforce a more perfect nutrition; it deepens and slows the respiration, preventing stasis of bronchial secretions, and obviating pulmonary complications; all the secretions are enhanced; the patient is refreshed and invigorated, and fights the battle for life with all chances in his favor. How different is the aspect of the case under the expectant treatment, and how different is the effect of pure antipyretic medication! The temperature may indeed be reduced, but the stimulating effect upon the nerve-centres and secretion, except on the perspiration, is absent. Vinay (*Lyon Médical*, 1888), who has made some creditable investigations on the subject, tells us that antipyrin does not relieve the delirium, which is in accordance with my own observation; it does not, like the cold bath, increase the flow of urine, by which noxious elements are eliminated. Vinay has confirmed Vogl's observation, that there was a rapid gain of weight after cold baths had reduced the fever.

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Kairin, resorcin, and antipyrin diminish the excretion of urea and nitrogen; hence they diminish the excretion of the *materies morbi* through the kidneys, while baths increase it. The liver, in patients dying after treatment by antipyrin, is from 6 to 12.50 grammes heavier than in those dying after cold baths. Indeed, there is an entire absence of effect upon the circulation after antipyrin, an effect which is marked after the cold bath.

Briefly stated, cold baths are antifebrile remedies, while antipyretics are simply antithermic. Hence the superiority of the former over treatment by antipyretic medication. A mixed treatment is advocated by Liebermeister and Ziemssen. The latter, who is one of the staunchest defenders of the cold bath (not, however, as an antipyretic alone), regards the gradually lowered bath as better adapted to the exigencies of private and civil practice, while he concedes that the results of Vogl and others, in military practice, leave nothing to be desired. Liebermeister insists upon the cold bath as an antipyretic to produce remissions, and orders quinine to render these more enduring. Naunyn, on the other hand, uses a modified and more temperate bathing, rejecting all antipyretic medication.

The statistics of these different methods have been presented to you, and I have now added as briefly as possible the reasons why the results are more favorable in the cold bath treatment first suggested by Brand in 1861. The latter is thus demonstrated to be the ideal treatment for typhoid fever, and that, whenever a deviation is made from it, Jürgensen's opinion, given at the Congress in London, is sustained, that "whenever he has attempted to deviate from the rigorous cold water treatment, he was compelled to return to it in order to obtain the best results." This then is the standard for our guidance. It is to be carried out as follows: Whenever the temperature reaches over 103° F. in the rectum, the patient is placed in a bath of 65° F. A half bath of this temperature, with affusions three or five degrees lower, is sometimes used. This is to be repeated every three hours, so long as the temperature is not reduced below 103° F.; and the patient is to remain fifteen minutes each time. Patient should be gently rubbed while in the bath; when he is removed from it, he should be wrapped in a coarse linen sheet, the extremities dried and wrapped in a blanket, and a stimulant may be administered. In extreme cases of muttering delirium, or when there is decided adynamia, a stimulating

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bath should be administered, even if the temperature is below 103° F. This consists of a half bath in warm water with cold affusion. A wet compress should be kept over the abdomen constantly when the patient is in bed. Judgment must be exercised to adapt the baths to the condition of the patient and stage of the disease. The Ziemssen bath, which may be used when the patient, his friends, or the doctor is timid, consists of submerging the patient into a partial bath, about 9° or 10° F. below his temperature, whenever the latter reaches 103° F. in the rectum. While two assistants gently play water over him and rub him, cold water is added gradually near the feet, until the temperature is lowered to 68° F. He remains altogether twenty to thirty minutes, or until there is decided chilliness and chattering of the teeth. (Simple pallor of the skin and smallness of the pulse do not indicate removal.) He is now removed and wrapped in a dry sheet. The bath is repeated as often as the temperature reaches 103° F. This bath also requires judgment, as does every valuable remedial measure. The clinical picture of a case of typhoid fever treated by the cold bath, as given by Brand and Ziemssen, and as I have personally observed, indicates that the whole aspect of the case is changed; the patient is bright, cheerful, eats well, sleeps well, all his functions are properly performed, and, what is most important, complications are prevented. Even disease of the intestinal glands does not go beyond infiltration, according to Brand, if the case be treated early.

Ziemssen and Vogl furnish from personal experience a description of the beneficial effect of cold baths upon themselves when they suffered from typhoid fever.

We must not be deterred by timidity from rigorously executing the plan of three-hourly bathing so long as the temperature is 103° in the rectum, or when the sensorium is deeply depressed with a lower temperature. Even sleep should not prevent resort to the thermometer and bath, if needed. The object of this treatment, it must be understood, is not to subdue the temperature, but to vivify and energize the vital organs, and thus insure a vigorous resistance to the toxic influences arising from the infective processes. This is the great aim to be kept steadily before us.

In presenting this apparently heroic treatment to the reconsideration of the profession, I am aware that there are serious objections to its general adoption, which seem almost insurmountable. The

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profession must first be educated to abandon the policy of expectancy, whose aim it is to allow the fever to pursue its own course:

1. The annoyance to the patient is not in accordance with the expectant plan, whose object it is to avoid all disturbance of the patient for remedial purposes. So long as we had only an inefficient, if not injurious, medicinal treatment, it was wise to avoid disturbing sleep. But in a severe case of typhoid fever it is as important to disturb sleep when the rise of temperature indicates the necessity, as it is in opium-poisoning when stupor supervenes. Indeed, the treatment is somewhat analogous, inasmuch as the object is to arouse the nerve-centres, and keep them aroused (though not continuously as in the latter) until the toxæmia has passed away.

2. The nurses and friends of the patient will be reluctant to adopt so active a measure. If the physician is convinced that he is right, he must insist upon his directions being followed.

3. The idea that the reduction of temperature is the leading object of the cold bath, and the much greater facility of accomplishing this object by antipyrin and antifebrin, may deter many from adopting the former. The fallacy of this course has been demonstrated.

4. Timid persons may be alarmed by the patient's pallor, small pulse, and complaints of chilliness while in the cold bath. But if properly administered, with chafing of the body and limbs, these effects will be counteracted to some extent. Reaction after removal will soon reassure the attendant, and embolden him to order a regular repetition.

5. A slovenly application of the bath, or the substitution of some other method—packing, sponging, sprinkling, etc.—will fail and cause discouragement. It must be remembered this is not *cold bathing*. A small experience, personal or from hearsay, which may have been unfavorable in one, two, or several cases, will deter some from adopting the energetic cold bathing. An intelligent hospital physician told me yesterday that he was discouraged from the cold-bath treatment by witnessing, while an interne in one of our hospitals, the death of a patient after being placed on a Kibbé cot, wrapped in a sheet, and *sprinkled with ice-water* for a considerable time. This method is not recommended by any author whom I have quoted, nor is it even to be compared to Currie's cold affusion, in which the stimulus of impingement of a large mass of cold

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water upon the surface favors rapid reaction, with its resultant stimulating effect on the nerve-centres.

The only modification of the general cold bath admissible is the stimulating affusion advised by Brand in cases threatening heart failure and delirium. This is a warm half-bath, with cold affusions over the head, chest, and back. (One important point is that the tub should always be brought to the bedside, to avoid unnecessary disturbance of the patient.)

6. The experience with cold bathing in England and America, where it has never found favor, has been too small to afford a proper estimate of its value. Dr. Bristowe, of St. Thomas's Hospital, opposes it; he says:

"My personal experience in this treatment is not extensive, and for some years I have rarely, if ever, resorted to it. I have undoubtedly seen patients apparently benefited and making a good recovery. But I have never felt satisfied that the benefit was real."

Dr. Austin Flint published, in 1882, a lecture which exercised a potent influence in this country. He treated seventeen cases in Bellevue Hospital. "In a few cases the cold bath of 80° F., gradually reduced to 65°, was employed, but was discontinued on account of the inconvenience." His conclusion was that the antipyretic treatment neither increased nor diminished the mortality, which was four out of these seventeen cases.

Compare these statistics with those offered by Brand, and their utter insignificance for purposes of deduction is apparent. The prejudice existing against the cold-bath treatment is illustrated by a passage in *Strümpell's Practice*, a translation of which is now used as a text-book in the College of Physicians and Surgeons of New York. Strümpell says, with his usual fairness:

"There is at present no other single method of treating typhoid fever which has so numerous and evident advantages for the patient. We regard it as the duty of every physician who undertakes to treat a severe case of typhoid fever to try his best to have the bath employed."

The editor and translator (a noted hospital physician) endeavors to neutralize this recommendation by stating that,

"notwithstanding the high praise bestowed on the cold-bath treatment in Germany it has never become popular,"

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and quotes Senator's statistics in support of his position. This is a serious misstatement, because Senator distinctly says (*Berl. klin. Wochensch.*, 1885, p. 758):

"If my essay has made the impression that I oppose cold baths, I must have expressed myself very badly."

7. One objection to the strict execution of Brand's method is doubtless the difficulty, if not impossibility, of treating patients before the fifth day. Indeed, this can only be done in military hospitals or in epidemics. Every suspicious case should be subjected to the bath. At any rate, the more nearly we approach the high standard of strict bathing, the more nearly we will approach the low mortality. Hence the earlier the baths are resorted to, the more strictly in accordance with the directions regarding their temperature and frequency, the more completely will the toxic processes be controlled and the mortality be reduced.

In conclusion, let me urge upon you to weigh carefully the evidence I have so imperfectly presented, and to seek in the literature of the past two years further information ere you decide to reject it and to continue the present fatal expectant-antipyretic course of treatment. As I have elsewhere said: The history of medicine does not present a parallel to the application of statistics for the elucidation of a question of therapeutics which Brand has presented and which I have amplified. The evidence is before us, clear and incontrovertible. Upon our conscientious, unbiassed, and fearless judgment and action rests the weal or woe of those who commit their lives into our keeping.

DISCUSSION.

Dr. C. E. Bruce, of New York: My experience with bathing in the treatment of typhoid fever, as suggested by Dr. Baruch, though limited, has been unfortunate in some respects, and in general I have not had the success that has been held out to me by the competent authorities who have suggested it. It has been my misfortune to see or to know of quite a number of cases in a comparatively short space of time where sudden death has resulted from the cold bath. In the typhoid fever of children I have had fair success by sponging the body, always using water of a temperature not much less than the pyrexia of the patient and incorporating a fair proportion of alcohol. Immediately after the sponging I have had the child wrapped up in warm blankets, and allowed it to remain perfectly quiet until the moisture has been

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absorbed, when I have the surface of the body covered with warm oil. By this procedure I have often seen children restless and delirious quiet down very kindly, go to sleep, awake refreshed, and show evidence of a better condition. My experience with the method is limited, yet the results have been such that I am inclined to follow it up.

Dr. I. N. GOFF, of Cazenovia: I have seen two cases of phlebitis in typhoid fever which seemed to be caused by large doses of quinine. One patient, a boy, was taking sixty grains of quinine in twenty-four hours when phlebitis developed; the other case gave a similar history. I believe in both the complication was due to the large doses of quinine.

Dr. B. F. SHERMAN, of Ogdensburg: In regard to the prophylaxis of typhoid fever, I presume my experience has been about that of most country physicians. The people ignore the suggestions that they are responsible for their sickness, and that it is their duty to make an effort to remove the causes. Still I think we should not cease in our efforts to prevent the disease.

With regard to phlebitis: over sixty years ago typhoid fever prevailed epidemically over a part of Vermont. At that time I was comparatively young, yet the history of it is to me very vivid, for during one epidemic there were seven cases in our own family. Quinine was not used. Two of the patients had femoral phlebitis, and one of my brothers, still living, has not ceased to suffer from its results. During nearly fifty years' practice since then, having seen a good deal of typhoid fever, I have met with but one case of phlebitis. I do not think it can be attributed to quinine.

Dr. A. N. BELL, of Brooklyn: One of the gentlemen said that the object of the cold-bath treatment is not the reduction of the temperature. Yet cold water is one of the most powerful means of reducing the temperature, and I am inclined to believe that the chief benefit from it is due to that fact.

V. THE MUNICIPAL CONTROL OF DIPHTHERIA.

BY CHARLES STOVER, M.D.,
AMSTERDAM, N. Y.

PUBLIC sanitation is nothing if not practical. Without waiting for the solution of the scientific questions raised by bacteriologists, the sanitarian accepts the dictum that diphtheria is a specific, infectious, and contagious disease—a conclusion reached not by the proofs of bacteriology, but rather by logical deduction. Perhaps it

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matters little to the sanitarian whether bacteria are parasites living upon the human tissues, or poison-producers infecting them; his duty is to eliminate all conditions that favor their presence. The effort of Health Boards to check the widespread prevalence of diphtheria that cost the State last year 6448 of its young lives (more than 6 per cent. of the deaths from all causes), is sure to enlist the interest of physicians, without whose coöperation the Health Board is well-nigh powerless.

In a paper read before the American Medical Association, Dr. Henry B. Baker shows that in 102 outbreaks of diphtheria in which isolation or disinfection, or both, were neglected, there was an average of a little over 16 cases and 3 deaths to the outbreak; that during the same time in 116 outbreaks, in which isolation and disinfection were both enforced, there were only about one-fifth as many cases and deaths; from which it appears that there was a saving of about four-fifths of the cases and deaths by thorough isolation and disinfection. Dr. Baker also states that, according to his observation, the disease is as prevalent among those with "an abundance of pure air, good water, wholesome food, clean soil, and a clean personality." One will hesitate to accept this latter statement as a fact of general application.

The logical application of the germ theory would lead us to exercise the same public control of diphtheria as of yellow fever, cholera, and smallpox. Health Boards must, however, educate the public to this belief, for no code of sanitary ordinances can be enforced unless supported by an acquiescent public sentiment. It is, therefore, necessary to avoid revolutionary changes, to advance step by step, until it is recognized that the laws of contagious and infectious diseases are of common application.

Such a transitional plan has been in use at Amsterdam for the past year, and has been proven practicable and beneficial in the operations of the Health Board. To secure control of the diphtheritic patient at the earliest practicable moment, the physicians are provided with addressed postal cards for reporting them, entitled, "Notice of contagious disease." Upon receipt of the notice the Health Officer places upon the door of common entrance a card reading,

"There is in this house DIPHTHERIA. This is an infectious and contagious disease, and all persons are hereby cautioned against needlessly exposing themselves to it."

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At the same time, the household is informed that the card is a signal of danger to protect their friends, and not in the nature of quarantine. No objection is made to it, it is looked for as a matter of course, and is left on until the premises are free from the disease. Several instances have occurred where persons from adjacent towns have turned away, without entering, at sight of the placard. Tracts are left with the householder, giving information upon the disease, its mode of propagation and prevention, the isolation and disinfection of the person, room, and premises. A postal card addressed to the Health Officer is also left, with blanks to be filled in giving notice of the termination of the disease, and whether fumigation has been done, this being usually left to the attending physician; in large cities probably more direct surveillance would be necessary.

If children in the household are in school, the principal is at once notified to exclude them until he is informed that the house is free from disease. The school is the great centre of contagion. One of the most fatal outbreaks occurring last year in our city was propagated in a single district school, and continued more than a month while all of the other districts were exempt, a parochial school within a stone's throw sharing in this immunity. The lowest monthly number of cases during the year was during the months of the summer vacation.

In rural localities the disease is usually imported and then continued by contagion; soil pollution has little influence. The reverse is true, however, in cities and villages, where the wholesale contamination of the soil with privy-vaults, cesspools, and leaky sewers, continued by successive generations, provides a place for disease germs to propagate. It follows, therefore, that for the prevention of diphtheria not only should *isolation and disinfection* be rigidly enforced, but the most scrupulous care taken to prevent soil contamination in densely populated localities, by perfecting systems of drainage and sewerage, and by making cellar walls and floors impervious to the penetration of contaminated ground air. Great as the benefits of a good system of sewerage are, it can hardly be expected that it will restore the soil to its state of virgin purity, after a century of defilement. It is doubtful if the low death-rate of Pullman, Ill., often cited as an instance of what good sanitation may do, can be reached in an old city that has once been

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honeycombed with leaky sewers, cesspools, and leaching privy-vaults, unless the foundations and cellar floors of houses are made air-tight, and the contaminated ground air excluded.

VI. Basedow's Disease.

By H. R. HOPKINS, M.D.,
BUFFALO, N. Y.

The literature of this disease dates from the publication by Graves of his observations in 1835. In recognition of his work, English, French, and American authorities generally name the disease Graves' disease. In 1840 Basedow published his accounts, more comprehensive than those of his predecessor, and the German fashion is to name the disease Basedow's disease.

It occurs to me worth while to occupy the time of this Society for a few moments in the presentation of this matter for two reasons: in order that our *Transactions* may bear some record of the experience of the profession in this particular, and because opportunity has been given me to make observations although not numerous yet quite extended in time.

The signs of this disease involve three organs—the heart, the thyroid body, and the eyes. We will consider these signs in the order in which they habitually present themselves.

First, the signs pertaining to the heart. This peculiarity ordinarily exhibits itself to the sufferer as an habitually rapid or tumultuous action of the heart. When this rapid action is brought under medical observation it is discovered that the heart is habitually acting at a rate of from 100 to 240 pulsations per minute. Early in the disease this action is uniformly rhythmical. Later in the course of the malady the rhythm is lost, and irregular intermittency becomes the habitual state of the pulse. It is to be observed concerning this peculiar action of the heart, that it is rapidly increased or even brought on by either emotion or unusual exertion. That condition of the heart so graphically sketched by Da Costa, irritable heart, seems to be the term most fitting the condition we are now considering. Notwithstanding this irregularity of function, the most searching examination ordinarily fails to discover any signs of

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organic disease. It is necessary, however, at this point to emphasize the caution that hemal murmurs are frequently discovered, more particularly where anæmia or chlorosis is present.

The next group of symptoms which we will consider refer to the thyroid gland. This body is soon discovered to be enlarged. The observation of a large number of cases plainly indicates that the right side is the most prone to enlargement, the left following in the course of a few weeks or months. An examination of this enlarged body reveals that it is soft, pulsating, and upon auscultation gives forth murmurs. In the later stages of the disease sclerosis takes place and the gland becomes more resistant, and may even become calcareous to feel.

The third group of symptoms which constitute Basedow's disease consist in a remarkable fulness and bulging of the eyeballs. Most observers agree in the statement that the right eye is the first to show this peculiar enlargement. Exceptions to this, however, are noted, particularly by Yeo. Minute examination of these organs demonstrates that vision is in the main normal and the pupils are unaltered. In the majority of cases this condition remains throughout the disease. Exceptions, however, are noted, and it is worthy of remembrance that cases in which the exophthalmus is present in the greatest degree are liable to corneal ulcer from the exposure of the greatly enlarged globes. Some observers make much of the loss of the consensual motion of the globes and the lids, the muscles of the lids failing to move up or down as the globe is revolved in the act of vision.

As a matter of diagnosis, it seems to me worth while to introduce a caution at this point as to the prominent eye and remarkably clear cornea frequently found associated with cardiac hypertrophy.

Aside from this remarkable combination of symptoms of heart, of thyroid body, and of the globes of the eye, certain general symptoms are frequently observed. Chief among these is anæmia. In a large proportion of cases, particularly those in early life, anæmia seems to be the predisposing cause of this remarkable condition. Various authors call attention also to a remarkable mental irritability which appears to develop with the disease, an irritability in marked contrast with the habitual state of the patient. Others lay considerable stress upon an almost reverse mental state, a cheerful placidity and hopefulness, even under the most untoward and discouraging bodily conditions.

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In a case now under my own care, that of a woman of a healthy and well-ordered mind, in whom the disease developed when the patient was in her fifty-first year, the change of character is most marked. During all of her early married life, the responsibilities of a large family, of an important position in society, finally the trial of great reverses in worldly affairs, were all carried with a remarkable self-composure. Since the development of this disease self-reliance is a thing unknown to her, although the symptoms are in nowise urgent. She has not the fortitude to be left alone in her room by day or by night for a single instant. This peculiar mental state seems to be, in the main, due to her entire lack of confidence in her cardiac action.

In the way of diagnosis of Basedow's disease, it seems to be necessary first to observe that the disease is not always typical. Cases are met without symptoms of goitre; in other cases exophthalmus is wanting. I have not heard authors make a diagnosis in cases in which the cardiac symptoms were wanting, but it is reported by some that the pulse-rate was never above 76 or 80 per minute. It seems particularly important, also, that we be ready to exclude cases of irritable heart occurring in those having goitre; also that we recognize an important class of cases recently brought to the attention of the profession by John S. Bristow, of England, under the heading of "Recurring Palpitation of Extreme Rapidity by Persons otherwise Apparently Healthy." In this publication, Dr. Bristow cites at great length and particularity fourteen cases in which the habitual pulse-rate ranged from 180 to 300 beats per minute. A heart of this kind occurring in a person with goitre may very readily be mistaken for Basedow's disease. In my judgment a correction can be made by fixing the relation in time which a goitre bears to the rapid heart action. We should also be ready to exclude cases of exophthalmus which are the result of orbital tumors.

I will not detain the Society with a discussion of the pathology of Basedow's disease, for the reason that nothing but hypothesis is found in the literature of this subject. Of theories, we have many; of facts, we have few. The fashion seems to point quite uniformly to the medulla oblongata as the seat of the disease. Whether the lesion of the medulla produces a vasomotor paresis, or a vagus inhibition; whether we have an increase of cardiac acceleration or

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a diminished cardiac inhibition, are questions for the future to determine.

The influence of sex in the production of the disease seems to be positive and uniform. The proportion of females to males is variously reported from two to one, to twenty to one. In my observation the former is too little, and the latter too great. All observers agree in reporting the disease to be rare under puberty, frequent in middle life, uncommon in those of advanced years, and that the presence of neurotic taint can uniformly be made out in the ancestry of those afflicted.

Regarding the prognosis of Basedow's disease, it may be remarked that it is in the main favorable; at least favorable, so far as the length of days is concerned. It should be remembered, however, that exceedingly rapid and violent action of the heart, long continued, may lead to cardiac dilatation and consequent failure. It has been to me a succession of surprises to have an opportunity of examining the heart of a patient, now under my observation for more than twenty years a sufferer from this disease. Rarely have I had the opportunity of seeing this lady with a pulse under 140, and I am assured that this is for her an habitual pulse-rate. Yet twenty years of this inordinate heart action has failed to produce any sign of organic heart disease, or to impair seriously the patient's health.

It seems to me also well to remember in this connection that many cases of Basedow's disease terminate in partial recovery. The exophthalmia and the goitre disappear, but the irritable heart remains as a permanent legacy.

Regarding the treatment of Basedow's disease, I would remark that it is mainly hygienic. The existence of reflexes, uterine or hemorrhoidal, should be carefully sought, and, if possible, the cause removed. Anæmia, if present, will furnish the cue for what may be a successful treatment. I think it is the late Austin Flint who refers to a successful case that took three times a day for three years two grains of reduced iron. German authors speak highly of the influence of hydrotherapeutics, of sea-bathing, of change to upland air, and condemn the use of iodine or of its preparations. For the relief of the rapid heart action, cardiac sedatives are all-important. My experience agrees with that of the writers who refer to the uselessness of digitalis in the early stages of this disease, and of the importance and reliable action of aconite and veratrum

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viride. The use of ice-bags to the precordia is frequently recommended. As to its efficiency, I have no personal observation to give. Galvanization of the vagus by from five to ten elements in the hands of many observers seems to have given exceedingly encouraging results. In severe cases where cardiac dilatation is present, rest and massage are remedies of the highest importance. I would present herewith sphygmograms taken upon cases in my own practice, and also some taken by my friend, Dr. Frederick Peterson, who recently presented to the Medical Society of the County of Duchess an exceedingly able and original paper upon this disease. In presenting these traces, I would remark that those of my own are in the main taken upon cases of the severest type in which cardiac dilatation was invariably present. Those of Dr. Peterson in the main are taken from cases in which the disease was of more recent standing.

DISCUSSION.

Dr. C. L. DANA, of New York: I have been very much interested in Dr. Hopkins' paper, especially because of having had several cases of this disease under observation recently. The author has gone over the etiology of the disease, but, unless I was not listening attentively, he omitted one or two interesting phenomena which have recently been studied. One of these is a peculiar tremor, which is almost always present, so much so that it is sometimes classed with the exophthalmus. It is called tactacardia. The other symptom is diminished electrical resistance. If the normal resistance in the adult be considered 2500 or 3000 ohms, in Basedow's disease it is sometimes reduced as much as one-half, or to 1500 ohms. This is due probably to vasomotor disturbance, the sweating usually present making the skin moist and lessening the resistance.

With regard to treatment, I have found that tincture of strophanthus will sometimes produce very excellent results, much better than those of digitalis certainly. In one case tincture of strophanthus combined with iodide of sodium has done the patient more good than any other single remedy. A remedy recently tried in a number of cases, by my friend Dr. Combes, is, I think, entirely new; that is the carb-acetate of ammonium. It has been followed by reduction of the frequency of the pulse and of the size of the tumor.

There is a large number of cases of an abortive type of Basedow's disease which is interesting to study. The diagnostic points in these cases are, mainly, the vasomotor and sweating symptoms, the great

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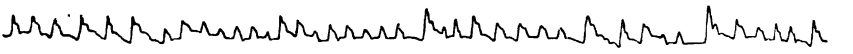
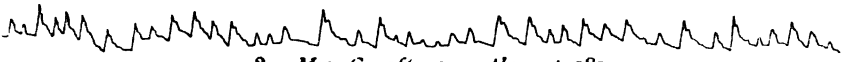
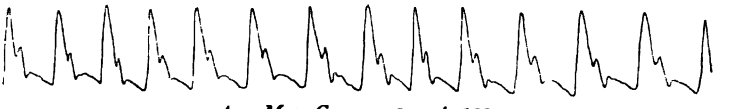


1. *Mrs. G., age* 55, *rate* 200 *to* 250.



2. *Mrs. G., after* 3 *months; rate* 180.

3. *Mrs. G., after* 9 *months; Cardiac dilatation*



4. *Mrs. C., age* 40, *rate* 110.

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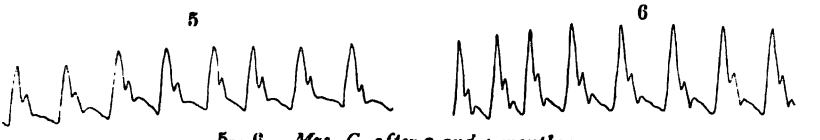
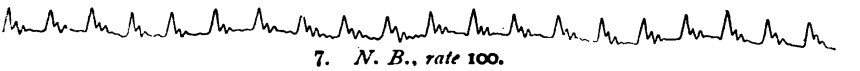
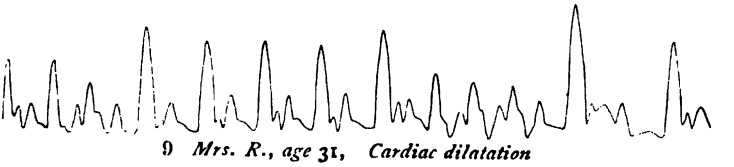


5---6. *Mrs. C. after* 2 *and* 4 *months;*

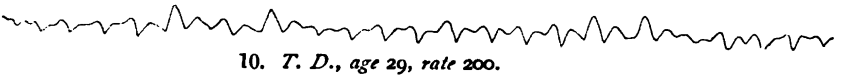


7. *N. B., rate* 100.

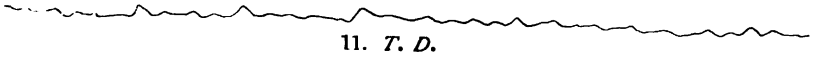
8. *N. B., rate* 110. 7 *and* 8 *by Dr. Peterson.*



9 *Mrs. R., age* 31, *Cardiac dilatation*



10. *T. D., age* 29, *rate* 200.



11. *T. D.*

SPHYGMOGRAMS. BASEDOWS DISEASE.

Taken by FREDERICK PETERSON, M. D. of New York, and H. R. HOPKINS, M. D. of Buffalo.

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nervousness, and the tremor. These are present with one or more of the other three symptoms, tactacardia, goitre, or exophthalmus.

Dr. A. JACOBI, of New York: In addition to what Dr. Dana has said I would remark that there is a tendency at the present time not to make, if it can be avoided, only a general diagnosis, as that of Basedow's or Graves' disease, but to find a local cause for even that disease. In this connection it occurred to me that we might consider those cases which are not fully developed, but which show unilateral symptoms, in order to draw conclusions on the nature of the disease in general. There are cases of goitre which are only unilateral. The symptoms are present only on one side, and usually on the right. That would, perhaps, point in the direction of the change in the thyroid gland being the cause of all the symptoms. Hyperhydrosis is sometimes confined to one side of the body, which might indicate that the disease was originally confined to one side. We know also that the thyroid gland has a great influence on the general body. Modern surgery has taught us that removal of the thyroid is frequently attended with a number of very severe symptoms, as idiocy and myxœdema. Then it has been found that the condition known as goitre is not always the same thing. Now and then cysts have been found in the thyroid; now and then degenerations of a fibrous character, etc., which show that we have changes in the thyroid gland of different nature, still leading to the same general changes. If we now consider the fact, as found by surgeons, that there are mental disorders following degeneration or removal of the thyroid gland, we may compare it with the other fact that these women—for the patients are almost all women—show a number of mental anomalies before they are taken sick with Graves' disease. A small number of them have been known to have chorea, a number have epilepsy, some are melancholic at the beginning of the disease, and often previous to it. Thus I think it may be concluded that this general disease is originally, in a large number of cases, a disease of the thyroid gland resulting afterward in those changes of the vasomotor system which we know so well. The statement made by the previous speaker, that all the symptoms are not always present, is quite correct. There are a number of cases in which only one or two symptoms are present, either through the whole course of the disease or for a long period. Particularly is this so in children.

Dr. Hopkins may have seen a paper which I wrote, in 1875, on Graves' disease in children. At that time I was able to find only seven cases in literature of Graves' disease in children, besides four of my own, making altogether but eleven. Since then another dozen have been recorded. It is characteristic of the disease in children for some

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of the symptoms, one at least, to be absent. The exophthalmus, as a rule, is very little developed.

As bearing on the treatment it may be remarked that in a few cases changes have been found in the tissues of the sympathetic nerve, but I believe we shall come to look for the principal cause of the disease as existing in the thyroid gland. The remedy which has proven of greatest value to me in such cases is arsenic, either as Fowler's solution or Pierce's solution, or, if we have to give it a long time, arsenious acid is preferable. The stomach gets along better with the latter preparation than with others. I have also seen good service from it in combination with digitalis and ergot. When it is necessary to give ergot a long time, I find it better as a solid extract than as a fluid extract or tincture.

VII. Hernia of the Pleura into the Neck.

By GEORGE R. FOWLER, M.D.,
SURGEON TO ST. MARY'S HOSPITAL; SURGEON TO METHODIST EPISCOPAL HOSPITAL, BROOKLYN, N. Y.

The little patient from whom this specimen was removed, was admitted to my service at the Methodist Episcopal Hospital on August 20, 1888, with the following history: Six months ago when at the age of three months, having previously enjoyed good health, she was attacked with acute bronchitis, and suffered greatly from violent paroxysms of coughing. The attack gradually subsided, but in the meanwhile the mother noticed a swelling upon the right side of the neck, which became larger when the child cried or coughed, and which almost entirely disappeared upon inspiration. This gradually increased in size, both at its base and in an upward direction, until in the course of a month it was found that a similar tumor had made its appearance upon the left side of the neck.

The patient upon admission was poorly nourished, and was nursed from an anæmic mother, who was evidently furnishing an insufficient supply of nourishment, and that of an inferior quality. It presented two well-marked tumors of the neck, one upon either side of the trachea, both of which, upon inspiration, nearly disappeared, but became full and tense upon expiration. The tumor on the left side of the neck presented a soft protruding mass, beginning above at the lower border of the inferior maxilla, and extending below nearly to the border of the clavicle. The tumor upon the right side presented a similar but smaller protrusion. She had constant dyspnœa and was aphonic. The child was weaned and fed on peptonized milk. Her general condition apparently improved until an attack of acute bronchitis supervened, which ended fatally in three days. I am indebted to Dr. Eugene Hodenpyl, pathologist to the hospital, for the very careful autopsy and accompanying preparation of the lungs, pleura, etc., and the following account of the post-mortem appearances:

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"The protrusions of the neck are but the portions of an enormous sac connected with the upper part of the right lung. When distended, it occupied a large part of the right pleural cavity and anterior mediastinal space between the thymus and pericardium. The tumor had passed into the neck behind and to the sides of the trachea and œsophagus as high as the jaw, extending posteriorly to the vertebral column. The portion of the sac on the left side had found its way into the upper part of the left pleural cavity, displacing the lung and costal pleura of that side downward to the extent of two inches. The sac, which contained odorless air, and had thin, smooth, glistening, and transparent walls, had pushed its way behind the trachea and upward toward the anterior surface of the neck, until it had produced the tumors noted. It also completely surrounded the œsophagus as high as the lower border of the jaw. The trachea and larger bronchi were very much congested and contained muco-pus. There is a rupture of the primary bronchus, which enters the upper lobe of the right lung, affording direct communication with the cavity of the sac. The right lung is collapsed and lies in the bottom of the pleural cavity. The heart is somewhat displaced toward the left. The other organs show no lesions."

As will be seen by the above description of the anatomical appearances, the tumors were the result of a rupture of the primary bronchus in the upper lobe of the right lung. The air escaping underneath the pleura, stripped it from its pulmonary attachments. As the sac thus formed forced its way through the apex of the pleural cavity, its walls were reinforced by the costal pleura. As it ascended into the neck, it was still further reinforced by the deep fascia of the neck. Passing behind the trachea and around the œsophagus, it formed the tumor upon the left side of the neck; this, descending, forced before it in turn the deep fascia of the neck and costal pleura of the left side, finally entering the pleural cavity.

The subject of air tumors of the neck has been very carefully studied recently by Dr. L. H. Petit, in a paper read before the Congrès Francais de Chirurgie, in March of last year. Petit describes but two pathological conditions constituting "aërocele" of the neck, although in his paper he speaks of the latter as being "presented in four very distinct forms." As a matter of fact, however, as before stated, but two pathological forms of this affection are described: First, a perforation of the mucous membranes of the trachea may lead to a diffused emphysema of the neck. Second, there may occur a herniated condition of the mucous membrane of the trachea, which is forced into the structures upon the side of the air-tube further and further, thus constituting a true air tumor of the neck. This, upon inspiration, becomes lessened, and increases upon expiration. Compression may also temporarily

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reduce its volume. Closure of the connection between this hernial sac and the cavity of the trachea may prevent the reduction by compression, and render the tumor more or less resistant to pressure. This true air tumor of the neck may be converted into a diffuse emphysema by rupture of its walls. Petit's description of "four distinct forms" therefore resolves itself into the two conditions above described. He has evidently searched the literature of the subject very carefully, but can scarcely be said to have added anything new to our knowledge upon the subject.

P. Fabre (*Gaz. méd. de Paris*, 1886, 7th ser., lvii. 374) describes a case of so-called air tumor of the neck, which he observed in a child about a day old. This consisted of an air diverticulum in front of the neck and at the superior middle portion of the thorax. When the child cried the diverticulum would become filled with air, which latter disappeared upon inspiration, leaving a marked depression. The child when last seen was fourteen months old, and the condition described still existed. One must infer from Fabre's description of this case, that the child was the subject of congenital fissure of the sternum. Otherwise it is difficult to conceive of a tumor of the character mentioned existing at the "superior middle portion of the thorax" without either fissure or entire absence of the sternum or ribs.

Most careful search of the literature of this subject fails to reveal a description of the condition herewith presented or anything analogous to it.

I am indebted to Dr. Prudden, curator of the Museum of the College of Physicians and Surgeons, New York, for the opportunity of presenting, in connection with this subject, a specimen taken from an infant a few days old, who died of acute bronchitis. It will be observed that in this case a rupture of a bronchus in the upper lobe of the lung occurred, with stripping of the pulmonary pleura from its attachments. This constitutes a condition which primarily occurred in my own case, and had the child lived, it would, in all probability, have presented another example of hernia of the pleura into the neck.

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VIII. The Prevention of Summer Diarrhœa among Infants, viewed in the Light of the Lesions.

By L. EMMETT HOLT, M.D.,
NEW YORK.

The purpose of this paper is to call attention to the fact that many of the so-called dyspeptic intestinal catarrhs of infancy, commonly looked upon as merely functional in character, produce lesions of considerable moment. These lesions are of importance, not so much in their immediate effects as in their relations to the severer forms of disease, particularly entero-colitis.

My attention was first drawn to these cases by two autopsies made last summer upon infants ten months old. One child died of acute pneumonia without intestinal complications. Throughout the large intestine the solitary follicles were very much increased, both in size and in number. In some places they were so numerous as nearly to cover the mucous membrane. This enlargement was at the expense of the rest of the mucous membrane. The follicles were eroded at their summits in many places, and looked as though they were beginning to ulcerate. Some of these erosions might have been produced accidentally in mounting the specimen, but many were present when it was removed from the body.

During the first five months of life, the mother stated that the infant had never had normal movements from the bowels; the passages were green or greenish-yellow, nearly always containing mucus, but were never frequent, at most three or four daily. The child was nursed entirely, and as the general health did not seem to be affected, and it gained steadily in weight, the mother did not think this intestinal catarrh of sufficient importance to call the resident physician's attention to it, although he saw the infant daily. The passages gradually became normal without treatment, and during the last five months before death had continued so.

The second case was that of an infant who was injured by falling from a window, and died within an hour. In this colon almost the same condition as seen in the first case was found to exist. The patient had never suffered from acute diarrhœa, but for nearly three weeks before death its stools had been very much of the

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nature previously described. Nor in this case had the mother regarded the fact as of any importance.

Microscopical examination in these cases revealed very slight catarrhal changes, but the important feature was the great enlargement of the solitary follicles.

Further experience in the examination of the intestines in patients dying from other diseases, usually pneumonia, confirmed the impression made by the first two cases, viz., that a dyspeptic intestinal catarrh (I use this term for want of a better) produces, when it is allowed to run on, marked alterations in the walls of the intestine.

If we examine a child's intestine some months after a sharp attack of entero-colitis, we find a very similar anatomical condition.

In cases of acute entero-colitis, dying after ten or twelve days' illness, the most constant change found is swelling of all these solitary follicles, with, in many places, the formation of small circular ulcers from the breaking down of these follicles.[1] We conclude, then, that this condition of the solitary follicles such as we have described as occurring in dyspeptic catarrh, has a very intimate relation to follicular colitis. We may, perhaps, be justified in regarding it as identical with the first stage of the ulcerative process. The swelling in both cases is most likely due to the same cause, the absorption of ptomaines produced by the intestinal decomposition.

The intestines of infants are normally peculiarly rich in lymphoid masses, which, in disease, proliferate with great rapidity. These lymphoid nodules play a very important part in the pathology of the intestines in infancy. The enlargements take place here from slight irritation when continued, just as in the lymphatic glands of the neck; all the more readily if the patient is delicate or cachectic.

Turning now from the pathological to the clinical side of the question, what do we find?

Meinert, of Dresden, in a paper published last year, and extensively quoted, states that of four hundred and seventy-nine fatal cases of diarrhœal disease occurring in that city "seventy-one per cent. had previously healthy digestive organs." His information was obtained from the physicians who treated the cases and gave the certificates of death. The information of the physicians under such circumstances we may safely assume would relate to acute or

[1] Photographs of specimens illustrating these lesions were shown.

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severe forms of gastro-intestinal disease, since mothers do not, as a rule, attach any importance to the dyspeptic intestinal catarrh we are considering. We cannot, therefore, it seems to me, attach any importance to Meinert's statistics as bearing upon the point under discussion.

In the New York Infant Asylum we have under close observation nearly four hundred children, most of them from the time they are a few weeks old until four years old. Our experience there has been that the great majority of all severe and fatal forms of entero-colitis in summer are preceded often for weeks by a "dyspeptic catarrh." Very often, I am sorry to say, this fact is not discovered until severe symptoms have developed, so little importance do the mothers attach to the disorder, particularly if the infant happens to be teething.

An idea of the frequency of follicular ulceration may be gained from the following statistics: Of fifty-seven autopsies I have made recently upon children dying from diarrhœal diseases, follicular ulceration existed in nineteen, or thirty-three per cent. of the cases. In almost every case the solitary follicles were very much enlarged. These cases presented clinically about all the types met with, and since they were, with but few exceptions, taken consecutively in an institution where all fatal cases come to an autopsy, they may be assumed to represent pretty fairly the frequency of the different lesions. (I need scarcely say that cases of tubercular ulceration have not been included.)

I will not enter here upon the discussion of the subject of intestinal decomposition and the development of abnormal bacteria, not because I underestimate its importance, but because my present purpose is to emphasize the other aspect of the question. The lesions, while no doubt aggravated and possibly primarily caused by the bacterial growth, when once present favor it to a marked degree.

It has been too much the fashion recently to think only of intestinal decomposition and not at all of the lesions with which it is so intimately related.

I have spoken chiefly, so far, of changes in the solitary follicles. They are never found unaccompanied by catarrhal changes, but the latter are in most instances of a much milder type and not likely to be so persistent. Follicular changes are slow in disappearing. This explains the long continuance of what are apparently very mild

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cases of intestinal catarrh, and the frequent relapses after more acute attacks.

The practical bearing of the foregoing remarks is evident:

The treatment of follicular ulceration of the intestine is extremely unsatisfactory. I believe that the great majority of these cases are fatal. Certainly, I have never seen at autopsy in a child anything which resembled a cicatrized follicular ulcer.

Successful treatment must be in the nature of prevention.

Prevention must have regard to all the milder intestinal catarrhs.

Regarding neglected diarrhœas during dentition, so much has been said recently that it is scarcely necessary to enter here again a protest. There is to my mind no more reason why an intestinal catarrh should not be treated, and, if possible, cured during dentition than at any other time. The fact that a child with whooping-cough is extremely liable to bronchitis and pneumonia has never been given as a reason why these complications should not be treated promptly and energetically when they arise.

Is an intestinal catarrh ever salutary? This is questionable. A number of loose movements may be of advantage to expel undigested food or other irritating materials from the intestine, but that a persistent intestinal catarrh, even if not severe, is an advantage to any child at any period remains to be proven.

The medical profession should take strong ground against the prevalent popular opinion, that so long as the general health is not affected, an intestinal catarrh is not only of no importance, but may, during bronchitis or dentition, even be beneficial, and that to cure it might be injurious.

It is in such cases as these that, though amenable to proper treatment in the earlier stages, when allowed to run on, as they often are for weeks or even months, the foundation for grave and even fatal forms of diarrhœal disease is often laid.

The prophylactic treatment involves, then, the early recognition and intelligent treatment of all the forms of dyspeptic catarrh; in other words, it means that we must secure proper digestion, and this depends chiefly upon proper feeding.

Our attention has been repeatedly called of late to the importance of seeing that our milk and other infant foods are pure and free from germs and putrefactive products. This is all important. Another danger which has not been often enough emphasized is overfeeding.

During the past two years I have been trying to get at some

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exact data regarding the proper amount of food which an infant, who is artificially fed, should receive at the different periods. This has been studied, first, by measuring carefully at autopsies the capacity of the stomach; and, secondly, by weighing healthy infants who were nursed at proper intervals, before and after they were put to the breast.

While I have not yet accumulated sufficient statistics for publication, still enough has been learned so far to show that the figures given in most of our books are altogether too large, and that the vast majority of hand-fed infants are *very greatly overfed.*

Difficulty and failure may result from this fact where every other condition for success has been attended to.

In conclusion I would emphasize the following points:

1. Children should not be overfed at any time, but especially not in summer.

2. At this season, also, every dyspeptic catarrh should be attended to; many of these are promptly curable by merely clearing out the intestine and then cutting down the quantity of food.

3. Should an intestinal catarrh, even a very mild one, continue for two or three weeks, one may be pretty certain that he has something more than a functional disorder to deal with.

4. Every mild catarrh should be looked upon as the possible precursor of a severe type of intestinal disease, either near or remote.

5. In the treatment of all diarrhœal diseases it should be borne in mind that there is something more to be considered than the bacteria and the products of decomposition, viz., the anatomical changes.

DISCUSSION.

Dr. SIMON BARUCH, of New York: I desire to emphasize the importance of Dr. Holt's investigations by analogy. We know that summer diarrhœa, as it is called, is frequently due to the development of bacteria in the intestines. We also know that any lesion in the mucous membrane admits of their introduction and development in the intestine. The importance of this investigation is emphasized by the fact that the same line of investigation has had immensely good results in obstetrical practice. We now know that in order to prevent puerperal infection we must attend to the lesions in the utero-vaginal canal and prevent the introduction of bacteria. Upon the same principle, I think, it is important to remedy any lesion which may exist in intestinal catarrh before summer comes.

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IX. Diabetic Amblyopia.

By WILLIAM OLIVER MOORE, M.D.,
PROFESSOR OF DISEASES OF EYE AND EAR IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, ETC.

"What says the doctor to my water?"
"He said, Sir, the water itself was a good
Healthy water, but for the party that owned it,
He might have more diseases than he knew for."
King Henry IV., *Part II.*

There can be no doubt in the light of our present knowledge, that diabetes produces amblyopia which is central, and in which the visual field is not interfered with, but in which there is usually a central scotoma for red and green, and occasionally for blue; that the defect improves with diminution of, and increases with the quantity of, sugar in the urine; that it comes on rather suddenly, and increases, then varying according to the diabetic condition; that it rarely produces blindness, but may result in partial atrophy of the optic nerves. This class of cases may very easily be mistaken for the amblyopia ex abusu, unless care is taken to examine the urine for sugar; as the symptoms are much the same, and, as most men smoke, it is very easy to conclude that that is the cause of the amblyopia. Galezowski was probably the first to point out this resemblance, and, according to him, the diagnosis is very difficult without examination of the urine. The most important distinction drawn by him is that amblyopia ex abusu usually occurs in both eyes; that in diabetic amblyopia one eye may escape. This has not been our experience; from the cases observed by me all have been affected in each eye; this has also been the experience of Mr. Nettleship. It is my firm conviction that the amblyopia occurring in smokers having diabetes, is due to the loss of nutrition produced by that disease, and not to the effect of tobacco on the system.

Since the invention of the ophthalmoscope, much has been written on amblyopia in diabetes, without cataract, and without retinal hemorrhages or other visible lesions. And it is this particular form of ocular affection that is extremely interesting. A very careful exposition of this subject is presented by Mr. Nettleship

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and Dr. Walter Edmunds, of London, in the *Transactions of the Ophthalmological Society of the United Kingdom*, 1882, and from this we have made frequent use.

In 1858, Desmarres records the case of a woman, emaciated by diabetes, passing much sugar, with the sight so bad that she could no longer read. Also, a male, aged twenty-five, passing large quantity of sugar, with vision so bad that he could neither read nor write. After several months' treatment, health improving, the vision was so much better that No. 8 Jaeger, with glasses, could be read.

Begbie, 1861, writing in the *Edinburgh Medical Journal*, says he was familiar with a form of "diabetic amaurosis" coming on earlier than cataract, advancing gradually, and remaining permanent. He cites no cases.

The same year, Lecorchè, in an elaborate paper on "Diabetic Amblyopia," says the cause will probably be found to be a partial or general atrophy of the optic nerve, occurring independently of changes in any part of the brain. The suggestion that some cases of diabetic amblyopia were due to cerebral causes had been previously made by von Graefe, who had reported several cases of forms of eye diseases in diabetes.

Seegen, in 1870, reports a case of a male, aged thirty-eight: amblyopia, with no ophthalmoscopic changes; vision improved under treatment.

Another author reports the case of a male, aged forty-two: one eye nearly blind from old injury, with diabetic symptoms for six months; passing daily one pound of sugar; vision in the only eye failing for a month before coming under observation. The ophthalmoscopic examination revealed disk somewhat pale, but no other changes. Vision and refraction not stated.

Leber reports three cases, one of which, probably, does not belong to this class, but the other two may be considered.

Male, aged forty-three: passing sugar, but no albumin; amblyopia of R. E., V. $= \frac{1}{2}$; field normal for vision and colors. L. E., high amblyopia; shadows at centre of field, and fingers at five feet in outer part; inner half of field absent almost. Final recovery with both, on improvement in the general symptoms. Four years later the vision is reported as being good. A scotoma for white and colors at the central and outer central part of the field was left. No ophthalmoscopic changes.

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Male, aged fifty: double equal amblyopia, with central scotoma for colors, but no contraction of the visual field; V. = $\frac{20}{70}$. No ophthalmoscopic changes. He was treated as amblyopia ex abusu, and vision improved to $\frac{20}{30}$, each eye. Two months later, R. E. again became bad; V. = $\frac{20}{200}$; scotoma still present in both. Urine now examined, and found to contain sugar. Under treatment for the diabetes the vision improved.

Förster: female, aged sixty-two, having diabetes, in whom the disks became pale, and subsequently showed signs of atrophy. The field in this case was normal.

Galezowski, in 1878–79, reports the case of an officer in the French army, aged forty-eight, passing one hundred and fifty grains of sugar daily. No contraction of the visual field, but vision so imperfect that he could not discern faces at nine feet. No ophthalmoscopic changes. With diminution of sugar, some improvement in the amblyopia. Albumin, later, was found in the urine. He also reports the case of a clergyman, aged forty-four, V. = $\frac{1}{6}$; normal color-perception; visual field normal; no ophthalmoscopic changes; much sugar in urine.

Eales, of Birmingham, England, reports a case of a diabetic with amblyopia, male, aged fifty, without ophthalmoscopic changes, having a scotoma for red, green, *and blue*. This patient died shortly after being seen.

Bresgen, in 1881, reports the case of a male, aged twenty-four, diabetic, with symmetrical amblyopia, V. = $\frac{20}{200}$, with central scotoma for red and green, and with no contraction of the visual field or ophthalmoscopic changes. With an increase in the quantity of sugar voided the amblyopia increased to $\frac{20}{200}$, and the color scotoma increased also in size.

Mr. Lang, Mr. Nettleship, Dr. S. Edmunds, and Dr. Lawford, of London, have reported similar cases. Nettleship has reported the case of a female diabetic suffering from amblyopia. In this case there was no question of smoking.

I have myself seen six cases having central amblyopia, all having each eye affected; four were males and two were females; all had perfect visual fields, and all scotoma for red and green; the men smoked moderately, and the women not.[1]

The histories of these cases are as follows:

[1] Diagrams of the field of vision in these cases were shown.

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CASE I.—Male, W. A. S., æt. thirty-nine, sent to me by Dr. Galer, of Newtown, N. Y., in 1880; the patient had been suffering from diabetes for two years, and most of the time passing sugar. One month before his visit to me he first noticed trouble in his eyesight; this gradually increased until he could not see to read. When first seen he had R. V. = $\frac{20}{200}$, L. V. = $\frac{20}{80}$. No ophthalmoscopic changes. On testing the visual field, it was found to be normal; the color field showed a scotoma for red and green.

At this time the patient was passing fifteen grains of sugar to the ounce of urine. The media were clear, and the eyes looked perfectly normal. Three weeks after the first examination, the R. V. = $\frac{20}{200}$, as before, and the L. V. = $\frac{20}{70}$. A more rigorous treatment was adopted, the sugar diminished in quantity, and the amblyopia improved, but there was no change in the scotoma. The patient died one year later in diabetic coma. No autopsy.

CASE II.—Female, aged forty-nine, married, mother of three children. Sent to me by Dr. Fassit, of St. Albans, Vt., with the history of having had diabetes for the previous six months. One week before coming under my observation, she noticed failure of vision, which came on suddenly, and so much so as to give her much alarm. She was at this time passing one hundred and fifty ounces of urine daily, with much sugar. Vision, each eye, equal to $\frac{20}{200}$, no limitation of the visual field, but central scotoma for red and green.

No change in the fundus was noticed save, perhaps, a slight pale color of the temporal half of the disk. The vision in this case never became worse, but did not improve. The patient died two years and seven days after from exhaustion. No autopsy.

CASE III.—Male, aged forty-eight, seen by me at the Post-Graduate Medical School Clinic, December, 3, 1887, with the history of failing vision for the three months preceding. Examination of eyes revealed V. = $\frac{20}{70}$ each; no ophthalmoscopic change; visual fields intact, but color scotoma for red and green was found in the central part of the visual field.

This patient was voiding nine pints of urine daily, with large quantities of sugar. He was treated by the administration of potassium; the sugar was diminished, yet the amblyopia continued as before. The patient died eight months later, from asthenia. The eyes were examined repeatedly, but no ophthalmoscopic change could be discerned.

CASE IV.—Female, aged fifty-one, widow: first noticed an increase in her urine in 1882, in the early part of the year, after receiving a severe fall on the back; eight months after this she noticed a failure of vision in the R. E., and then in the L. E.; it finally became so bad that she could not read. When seen by me at my office, in December, 1882, she had V. = $\frac{20}{50}$ each, not improved by glasses, and with normal pupils, and with no ophthalmoscopic change, except, perhaps, a slight dirty look to the optic disk. No albumin in urine, but sugar in abundance. The visual fields, as usual, were normal, and green scotoma centrally placed; red was with great difficulty and inaccurately seen. Six months later the patient was examined again; vision of each eye equal to $\frac{20}{200}$, and scotoma for red and green still present in the L. E.; ring scotoma.

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Sugar in urine more than before. Patient died December 8, 1883, of gangrene of the right foot. No autopsy.

CASE V.—J. W. S., æt. forty-eight: after a severe injury to the back by falling, noticed an increased flow of urine, and, on examination three months after the accident, sugar was found in the urine in considerable quantity; emaciation and other symptoms of progressive trouble ensued, and failure of vision came on four months from the beginning. When seen by me, July 1, 1888, he had V. = $\frac{20}{60}$ each, with no improvement by glasses, and no ophthalmoscopic picture; the field of vision was good, but the usual color field, as in the others reported above, seen and mapped out. Under appropriate treatment the sugar diminished and the vision improved to $\frac{20}{40}$, and fluctuated from that to $\frac{20}{70}$, where it now remains (March, 1889); the patient being in a poor state of health.

CASE VI.—Male, æt. thirty-nine: has a history so similar in detail that I will not record it. This patient is still under observation.

In each of the six cases I regret that an autopsy was impossible, for it would have been interesting to make an examination of the optic nerve in these cases. Dr. Walter Edmunds and Dr. J. B. Lawford, of London, made such an examination in the case of a patient, aged twenty-nine. The optic nerve showed marked changes throughout the whole length of the orbital part of the nerve; in the diseased area was found thickening of the trabeculæ and of the walls of the nutrient vessels; the fibres in the nerves seemed to have been destroyed, and to be replaced by an irregularly granular structure, in which there were a large number of staining nuclei.

Mr. Nettleship reports, also, the post-mortem appearance of the optic nerve in a similar case. Microscopical examination of the optic nerve showed changes in the orbital portion of the nerve; the portion posterior to the optic foramen was not examined. Longitudinal sections were made of the nerve, and transverse sections at various points. The longitudinal sections showed no changes anterior to the lamina cribrosa. Posterior to the lamina, on one side of the nerve, was a tract with well-marked pathological changes, atrophic nerve-fibres, increase of nuclei, thickening of the connective tissue, trabeculæ, and of the walls of the small vessels. The thickening of the walls of the vessels was most marked in front of the point of entrance of the central artery of the retina. On a transverse section the atrophic patch appeared wedge-shaped; and from the relation of this diseased part to the central artery, at its entrance, it was certain that the change was chiefly in the temporal half of the nerve.

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In Samelsohn's case both optic nerves were examined, and symmetrical changes were found.

Deutschmann also reports similar appearances microscopically. These post-mortem examinations would lead us to conclude that we have a subacute retro-bulbar neuritis, and a subsequent atrophy of the optic nerve-fibres; that the cause of this neuritis is the poison in the blood produced by the derangement of the glycogenic functions; that not only the optic nerves are affected, but also the sciatic and others throughout the system.

Sachs, in an elaborate paper on central scotoma, finds the same appearances as above described.

From this clinical picture of the affections of the eye occurring in diabetes, it will be seen how varied and how numerous are the ways the poison of the disease shows itself in the same organ, and how we may, from the eye symptoms alone, make a diagnosis of unsuspected diabetes.

In conclusion, the following practical points may be summarized:

1. In view of the recorded facts, shall we not urge the examination of the urine for sugar in every obscure ocular affection?

2. Amblyopia in diabetics is usually associated with central scotoma for red and green, with visual fields intact, and does occur independent of amblyopia from tobacco and alcohol, as seen by our cases. And, further, diabetes can be diagnosticated by amblyopia when no diabetic symptoms exist.

3. That all the diabetic affections of the eye are the result of poor nutrition produced by the disturbance of the glycogenic function, and that the more marked the disturbance, the more profound and deep-seated the ocular affection.

4. That the changes occurring in the eye are also taking place in other tissues of the body at the same time.

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X. Acoustics of the Human Chest in Physical Diagnosis.

By JAMES R. LEAMING, M.D.

In a preliminary article which I had the honor to read before the New York Academy of Medicine on the 8th of December last I considered (1) the chest-wall as inclosing an acoustic chamber, (2) the lungs and connective tubes, and (3) the heart and bloodvessels as acoustic factors capable of originating sound-waves within the acoustic chamber. And, lastly, I made reference to the organ of hearing and to the instruments and methods of auscultation, mediate and immediate.

This brings us naturally to the practical application of chest acoustics—to the true interpretation of the physical signs of the heart and lungs in health and in disease.

Sound is caused by vibrations which send off sound-waves into the air, the universal sound medium, spreading out in every direction until they finally die away from diminished force. Causes of primary vibrations are readily illustrated by air forced through a tube, by a tense cord over which a bow is drawn, by a bell, or a bar of steel fastened at one end, set in motion by a stroke of a hammer or otherwise.

It is necessary, in order that the vibrations should produce sound-waves, that they should have definite force and frequency. The force of the primary vibrations must be sufficient to send off sound-waves into the air, and of frequency somewhere between 32 and 40,000 per second. Less than 32 produces a sensation of indistinct noises, and more than 40,000 ceases to give off sound-waves. The designations of high pitch and low pitch have reference to the frequency of vibrations, and are of prac-

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tical importance in determining the density of sonorous bodies under examination. High pitch denotes density, low pitch porosity. The pitch enables us to measure the number of vibrations in a second in any body under examination, determining the density; for, with an instrument called the siren, we can measure the number of vibrations in a second in any pitch, which brings acoustics under mathematical demonstration as an exact science, especially including auscultation of the human chest.

There are other limitations of hearing than those of pitch and loudness, which are more readily understood by comparing them with color-blindness in sight, the persons with such deficiency in either case not being themselves aware of it. Engineers and flagmen on railroads are examined in regard to their perceptions of differences in color in the protection of the lives and bodily safety of the travelling public. Why should not also the medical student, before devoting himself to physical diagnosis, test himself, or have himself tested, in regard to clang-deafness[1] before taking upon himself the responsibility of making a delicate diagnosis where failure to appreciate the tone differences in the acoustic signs may lead to a plan of management fatal to the patient?

These inquiries approach the domain of æsthetic taste at the same time that they have the solid foundation of practical truth.

The entirely correct ear in auscultation gives its possessor pleasure in listening to natural sounds in the fields, in the forests, on the extended plains, or on the mountain-tops—all of which are but dreariness to one who has not that inner sense of the beautiful in nature dependent upon tone appreciation.

In the wonderful music drama of "Siegfried" the natural sounds in the forest—the singing of birds, the drone of insects, the sighing of the wind among the leaves of the trees—are reproduced in music, the "Waldweben." The correct acoustic sense that fits the student for an auscultator will be delighted and appreciative; but the tone-deaf will not see or hear the

[1] Helmholtz uses this term to denote a tone with its accompanying overtones and partial tones.

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melody. It must be noted that this higher quality of tone recognition is entirely different from memory of a tune, which is memory with a sense of time and rhythm only, and enables its possessor to learn and sing "The Marseillaise" or "God Save the Queen" without a thrill of delight in their harmonious chords and spiritual suggestions.

It is an interesting point to determine by trial whether the color-blind are also clang-deaf, which would show, if decided in the affirmative, that the deficiency is not owing to any mechanical fault in the structural formation of the organs of sight or hearing, but is essential in the organic or spiritual life of the body. One fact is demonstrable—that the senses of hearing and sight may be greatly extended in range and accuracy by cultivation. This is seen in experts in music and painting. Culture increases the power of discrimination and delight in color and in tone in the masses, while the exceptionally natural, sensitive sense of sight or hearing will be increased thereby to expert excellence.

Primary vibrations may be conducted, reflected, or consonated. If there is in contact with the vibrating body another body or structure capable of being set into vibrations, the vibrations of both will be in unison; or, as in the case of the lung connected by adhesions to the chest-wall or by intermediate structures, or by tense cord-like adhesions of any length, then the secondary body—as the chest-wall is when the lung is adherent—may give off sound-waves which will pass into the air the same as if coming from a primary source. The familiar example of direct conduction is the one given of scratching the end of a log with a pin by one person while another listens at the other end, fifty feet away, and hears by illusion the sound under the ear. In such a case there is no solution of continuity, nor is there in the consolidated lung, by which also there is direct conduction. Indirect conduction of sound takes place when there are adhesions of parts to parts adjacent, as of the pericardial sac to the lung, and the lung to the chest-walls, when the heart's sounds will be heard at the site of adhesion of the lung to the chest-wall, although the origin of the murmur may be in another direction and a long way off, and yet will seem to originate directly under the stethoscope, which fact may give rise to a false diagnosis. For the natural intraventricular vibrations of a portion

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of the chordæ are in sound-connection with the pericardial adhesion and are indirectly conducted into the chest-wall, are there heard as if originating under the ear, while there is no fault with the mechanism of the heart as a pump. This shows the fallibility of the stethoscope as an instrument of precision. The locality of the murmur in the chest-wall may be no guide as to the local mechanism or origin of the sound.

Indirect conduction may be illustrated by the violin. The strings are caused to vibrate by the bow primarily, but these vibrations are conducted by the bridge into the front or belly, which is made of straight-grained pine cut so that each fibre may vibrate separately and in unison with the strings. The sound-post conducts these vibrations accumulatingly to and against the back of the violin, which is made of maple or sycamore wood of interlaced fibres which cannot vibrate in unison with the strings, but reflects the vibrations back into the air in the acoustic chamber. The sonorous material corroborates the vibrations at each passage from the strings to the bridge, from the bridge to the front, until they are reflected from the back into the body of pulsating air within the violin, which finally passes them out of the sound-holes into the open air.

Reflection of sound is the opposite of conduction, and in a sound-chamber prevents sound-leakage—in the violin through the back especially. In the human chest the pleural lining reflects equally from all directions. This acoustic fact becomes of diagnostic interest when adhesions connect the internal organs with the wall, or when they press against it, as when swollen, or are hypertrophied, etc. Then sound-leakage takes place. Echoes are reflected sound-waves, either parallel or converging. Reflected sound pertains altogether to sound-waves—not to primary or conducted vibrations.

Consonation also has to do with sound-waves alone. It has nothing to do with primary or conducted vibrations. Let one sing before a sensitive violin, and each string will be made to give sound vibrations whenever its fundamental note is sounded. Consonation is one of the most frequent phenomena of the human chest, and is constantly made use of by auscultators practically in searching for consolidation of the lungs or interpleural adhesions or cavities, by sounding the voice in phonation, or whispering, or by the cough. Dr. Holden, of Newark, N. J., introduced a little instrument to the profession a few years ago which illustrated consonation practically. It was an India-rubber tube an inch in diameter, about fourteen

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inches long, with a metal mouth-piece at either end. The patient would breathe through the tube forcibly so as to create air-friction, while the auscultator would listen to his chest at his back. If there were adhesions or any condensation of lung-tissue, it would be made evident at once by consonation and by the conducted sounds heard through the chest-wall; also, if there were cavities at the same time, it would diagnosticate them from tumors or consolidations, which otherwise may not so easily be done.

When these three principles of acoustics are applied—consonation, reflection, and conduction of sound—an interior view of the chest is opened to us as through a window. Much more is this evident in disease when we have previously applied these principles to the conditions of health.

In the lungs we have primary vibrations, consonations, and conductions. The lungs fill the sound-chamber and envelop the heart, with the exception of the apex-beat area. They are non-sound-conducting except in one direction—in that of the columns of air in the convective or air-conducting tubes.

The little group of air-sacs, six to thirteen in number, developed at the terminal ends of the air-tubes of the true respiratory system, forming a lobulette, do the principal work of aëration of the blood, the alveoli of the distensible tubes being but supplementary to those of the air-sacs. The delicate muscular fibres over each alveolus and each air sac contract upon the contained air, which is constantly expanding under the influence of heat; and sound vibrations are thus caused during inspirations, and especially at its full, individually small, but collectively forming a body of sound of low note. This murmur is significant of the healthful action of the vital process of respiration. If its process is interfered with by paresis of the enveloping muscular fibres, which always takes place in emphysema or in tuberculosis, the muscular susurrus, the true respiratory murmur, will not be heard. But when the disability is but temporary it is interesting to watch the gradual return of the murmur under successful treatment.

In centric pneumonia there is no other physical sign than the true respiratory murmur, except slightly raised pitch under percussion. This acoustic condition may remain scarcely changed for three or four days, but as soon as the pneumonic process has reached the pleural surface, immediately the physical signs show the fact. At once are heard interpleural râles and bronchial breathing, which

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denote consolidation of the lung and increased conduction of sound from air-friction in the tidal air-tract. The pneumonic condition existed just the same while there was yet no adhesion, but instantly became evident when sound-connection was established.

The early recognition of centric pneumonia gives time to prevent the pleural complications; a very important matter as regards pathological results. The greatly diminished true respiratory murmur over a definite area, corroborated by the slightly raised pitch, fixes the locality, completes the diagnosis.

To those who do not recognize the true respiratory murmur from want of attention or from imperfect sense of hearing, these cases are puzzling, for the rational signs indicate in a doubtful way the pneumonic state, pulse, temperature, and respiration slightly increased, with bloody or rusty sputa.

The recognition of the absence of true respiratory murmur in the centre of the lung will enable the auscultator to make a correct diagnosis and to predict a sudden augmentation of all these signs and symptoms, physical and rational, in a given time—*i. e.*, just as soon as the pleura becomes involved, and the gluey exudation forms sound-connection between its surfaces.

In the normal chest the freedom of movement of the pleural surfaces gives evidence of health. For, as the lungs fill with air and the chest-wall expands, each little lobulette travels a little distance in inspiration and back again in expiration. If the ear or stethoscope is placed against the chest-wall, a multitude of these little resonating air-sacs, each attached to a terminal bronchus—a minute speaking-tube—will pass under review and give sound vibrations: first, of themselves in the true respiratory system; second, of the air-friction in the tidal air-tract—which extends from the entrance into the mouth and nostrils, into the respiratory passages, down as far as to the fourth division of the bronchi—in which the air moves in a body; and, third, outside noises.

Respiratory murmurs are composed of these three elements, which are all intensified by passing rapidly in review in a lively movement of the lungs under the ear in auscultation. Interpleural adhesions fixing the lung in one place are denoted in this way, by the feeble respiratory murmurs, even when the air-sacs are free to contract and dilate as usual.

Every elastic air-sac dilated with compressed air is a resonator, the sounds consonated in which are, first, sounds outside of the

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body. Auscultators for this reason choose a quiet room in which to make their examinations, and sometimes, too, make the mistake of attempting to exclude outside noises by closing the opposite ear with the finger, which adds unnecessary confusion and shuts off nothing but their fixed attention. Second, the air-friction sounds formed in the tidal air-tract, which are conducted to and consonated in the air-sacs, such as sounds of dryness or of roughness, of mucous râles, and of foreign bodies.

In the first stage of acute bronchitis the mucous membrane is dry and rough and the air-friction gives sounds accordingly, which are conducted to the air-sacs by the bronchial tubes, in which they are consonated with increased intensity. Mucus formed within the bronchia moves forward and backward in inspiration and expiration, causing mucous râles, which also are conducted to and consonated in the air-sacs, especially when adhesions increase the conduction into definite localities. Many times the mucus and the râles are both immediately removed by coughing and expectoration. The mucus is a foreign body, and, like all foreign bodies, should be removed.

The following cases are briefly referred to as evidence of the value of acoustic signs in diagnosticating the presence and locality of foreign bodies in the air-passages:

CASE I. *A Spanish silver shilling diagnosticated to be in the third division of the right bronchus.*—A man, hurrying to catch a ferry-boat, put the coin in his mouth for convenience, and during a forcible inspiration it passed through the larynx. He came to me in the afternoon of the same day and told me that he had "swallowed" a shilling, and that he thought it was in the lungs. I then believed that it was impossible that a foreign body could pass the epiglottis. Dr. Horace Green had then but lately announced his ability to pass a catheter through the larynx. A committee appointed by the Academy of Medicine, after experiment and inquiry, had reported its impassability. I told the patient so, "but," said he, "I think I can feel and hear it here," placing his hand upon his chest. I listened and heard a "flap" in just about the fifth interspace in the right side. Keeping my ear to the chest, in a few moments there was another "flap," sending the sound in another direction. I soon discovered that after each "flap" a certain area of the chest-wall ceased to transmit respiratory sounds, which only lasted until the next "flap," when another area of the chest-wall became quiet. I was convinced that the coin rested its edge upon the septum of the third division, and, valve-like, turned back and forth as the newly inspired air underneath became rarefied by heat. I directed him to get on his bed and place a cushion on the floor near the bed, and then suddenly to

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turn down and bump his head upon the cushion, which he did, and the coin was expelled with an explosive cough.

CASE II.—Through the kindness of Dr. W. W. Jones I saw a man who, three days before, had passed a head of timothy through his larynx. He had placed the stalk between his teeth and was chewing it while giving directions in his stable, and, suddenly attempting to call to some one at a distance, he drew in his breath, and with it the dry head of timothy. One can hardly imagine a more frightful calamity. He coughed some, but did not think it necessary to send for Dr. Jones until the next morning, and even then he did not believe the timothy had passed the larynx, the symptoms were so much less than might have been expected. But they gradually became serious, and on the third day I was called in to auscultate him. There was then no true respiratory murmur and there were interpleural râles over both lungs, but on the right side there was conducted bronchial breathing down so low that I thought it involved the liver. The next day he coughed and vomited up a large amount of muco-pus, and in it was the denuded stalk of the timothy-head, after which there was a cavernous respiration. The autopsy showed abscesses in both lungs and extensive interpleural adhesions.

CASE III. *Blood in the right bronchus and lung.*—This occurred in a surgical case in St. Luke's Hospital, New York. A man was operated upon, while under the influence of ether, for the removal of dead bone in the jaw caused by phosphorous poisoning. While unconscious the blood trickled through the larynx and bronchia into the true respiratory system beyond the tidal air-movement, where it speedily putrefied and formed abscesses which caused the patient's death. I saw the patient each day and was able to note the physical signs. The first day there were conductions of bronchial râles, caused by the moving blood within the tidal air-space, and obstruction of the true respiratory murmur. The next day there were interpleural râles over both lungs, although the blood had passed mostly into and through the right bronchus. On the third day there was local peribronchitis with consolidation of the surrounding lung. On the fourth day there were moist râles in and around the consolidations. One the fifth there were cavities. On the sixth day there was general acute plastic exudation over both lungs. He died on the seventh day. The post-mortem showed that the pathological processes had been accompanied by the acoustic signs in each particular. The case was an "object lesson" of value to me—full of instruction in regard to the treatment of bronchorrhagic hæmoptysis, and makes plain the danger of attempting to arrest bronchial hemorrhage for fear of getting a clot below the tidal air-tract, where it rapidly causes destructive inflammation and cavities, and the patient dies, as is said, but which is a mistake, of "*acute phthisis.*"

CASE IV.—The next case in time was Dr. Gurdon Buck's—a tracheotomy-tube in the right bronchus of a patient at St. Luke's Hospital—an account of which is published.

A man came into the hospital with gummy tumor occluding the larynx, and immediate tracheotomy was necessary. The next day the opening was enlarged and the tumor removed, and a tracheotomy-tube of hard rubber

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was introduced, corked, and tied with tape at the back of his neck. This was for safety in case any sudden swelling should obstruct the larynx, and he was allowed to walk about the grounds and corridors. After three or four days, on awakening early in the morning, he discovered that the tube was gone. "The House," Dr. Riggs, and "the Junior," Dr. Lefferts, were at once called, but the tube could not be found. At Dr. Buck's request I auscultated the patient and found acoustic evidence of the tube in the right bronchus. It had dropped down and the lower end was engaged in the very short first division, which is subdivided into two or three bronchia distributed to the apex of the lung. Over this region alone the air friction in the tube could be easily heard. A consultation of all the surgeons and physicians of the hospital was called for the next day, and the tube was removed with a curved forceps.

CASE V. *A molar tooth "swallowed" by a man while etherized at St. Luke's Hospital.*—The House Physician, Dr. Lefferts, diagnosticated its presence in the left bronchus, but the patient utterly refused an operation until destructive inflammation had done its work. Dr. Lefferts requested me to auscultate the patient, and I confirmed his diagnosis. The tooth was impacted just above the the third division of the left bronchus, and two abscesses in the lung below had resulted. I have a photograph of the tooth in the bronchus, kindly given me by Dr. Lefferts.

CASE VI. *A collar-stud in the right bronchus, occurring in the practice of Dr. J. T. Kennedy.*—A boy playing ball, became very warm, took off his collar, and put the bone stud between his teeth, but, attempting to shout to another boy at a distance, the stud was carried through the larynx by inhalation into the right bronchus. It caused some irritation and cough, but his discomfort was not great. After some days, perhaps weeks, Dr. Kennedy brought the boy to my office for auscultation. There was acoustic evidence of a foreign body in the right bronchus, just above the third division, the broad button side of the stud being pressed against one side of the bronchus and the cone end against the other side, and the shank extended between. After a time plastic exudation took place in the pleural cavity and in the lung, and the father, who had before refused, consented to an operation, which was tracheotomy, and was performed by Dr. Markoe, who removed the stud with a curved forceps.

CASE VII. *Dr. Lefferts's removal of a brass ring from a boy's larynx by operation.*—A brass wire, bent so as to make a nearly closed ring, was in a child's mouth, and a woman, endeavoring to get it out with her fingers, pushed it below the epiglottis. It remained there about two years, although the child had been taken to clinics and to different doctors without relief. By the kindness of Dr. J. L. Smith, the boy was sent to my office, and the ring was traced acoustically to the upper part of the larynx. I sent this patient to Dr. Lefferts for laryngoscopic examination, who confirmed the acoustic diagnosis, and removed the ring by an operation. The case was published by Dr. Lefferts.

CASE VIII. *A man with part of a peach-pit in the right lung.*—After several months it was coughed up, but not until it had caused permanent injury to the lung. In the mean time he was frequently examined at my

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office, the acoustic evidence showing that it had passed beyond the tidal air-tract.

CASE IX.—A child, about two years old, "swallowed" a plum-pit, and it passed through the larynx and into the right bronchus, but its exact location was difficult to make out, because the child could not be kept still enough for a careful examination, and also because the true respiratory murmur is not fully developed until after twelve years of age, but it was presumably in the tidal air-tract. It was finally coughed up, being assisted by a blow upon the child's back by its mother.

CASE X. *Dr. J. A. Wyeth, at Mount Sinai Hospital. A little dart, made of a pin and yarn, used by children to blow through a tin tube at a target, in the right bronchus.*—The boy inhaled, and the dart passed through the larynx and into the right bronchus. By the kindness of Dr. Wyeth, the late Dr. Elsberg and I were requested to examine the boy. Dr. Elsberg could see its shadow with the laryngoscope, and I had acoustic evidence of its presence just above the third division of the right bronchus, and that it moved up and down in respiration as thickened mucus frequently does. Dr. Wyeth performed tracheotomy, and the dart was removed.

These interesting cases of foreign bodies in the air-passages are summarily alluded to for one purpose only—to show with what certainty their presence can be ascertained by applying the laws of sound in auscultation.

I have already, in Part I., given an explanation of the mechanism of the heart's sounds as agreeing with acoustic law. In studying the philosophy of murmurs we must remember that the heart is inclosed in a sound-chamber, enveloped in a non-sound-conducting medium—the lungs—with the exception of the apex-beat area, in which the heart has sound-conduction into the chest-wall in perfection only while the heart is in contact with it. There is at all times more or less conduction of sound, because of the immediate connection of the pericardium with the heart while in sound-connection with the chest-wall. So that the first sound (and the murmurs connected with it are the only ones formed within the heart) is heard in its entirety from its commencement until it is ended with, and emphasized by, the apex-beat. The second sound is formed by the forcible closure of the semilunar valves by the return blood in the aorta and pulmonary arteries. It is a door forcibly closed, and the sound is conveyed through the cardiac wall to the apex-beat area by conduction. It is also conveyed through the mediastinum into the sternum and adjacent chest-wall of the left side. The closing of the semilunar valves of both the pulmonary artery and of the aorta has the same source of conduction, the mediastinum, and into the

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same area. The different areas marked out by teachers and writers as separate localities of murmurs have existence only in their imagination. Because there are two sets of valves, a very short distance apart, it was imagined that there must be two areas, and so they were marked out.

Both hearts contract in absolute unison, the valves close in the same moment of time, and there is perfect synchronism of the two hearts' sounds—the first and the second. And the intervals of silence must remain in exact synchronic proportion so long as the heart remains in perfect mechanism as a pump. The perfect rhythm of the hearts' sounds and intervals of silence in the cardiac cycle becomes absolute proof of its perfection as a pump. The heart may be weak, irritable, and irregular in its action, but if the rhythm of the sounds and intervals of silence in the cycle is correct, there is no valvular disease, no matter what may be the disturbed action of the heart or the number and location of its murmurs. But as soon as the rhythm is altered, its extent will measure the amount of injury the heart has received, and then the murmurs of obstruction and regurgitation will define the locality and nature of the disease, even although conducted into the chest-wall by the common medium, the mediastinum.

Obstruction of the aortic orifice will cause a murmur which, by conduction of the mediastinum, will be heard at its point of attachment in the sternum and to a short distance into the chest-wall of the left side. It will also be heard in the course of the aorta, and especially in the right border of the sternum, through the attachment of the aorta to the chest-wall, for at these points there is indirect conduction of vibrations through the stream of blood into the chest-wall. The aortic and pulmonary signs part company at the first point in sound-connection through the mediastinum into the sternum which they have in common over the aortic valves.

The murmur vibrations at the right border of the sternum come through attachments to the aorta alone, and are conveyed in the stream of blood from their origin at the aortic orifice.

The regurgitant murmur at the aortic orifice will be heard in the sternum through the mediastinum, sometimes extending to the xiphoid cartilage, or in the stream of regurgitated blood against the heart's wall and into the chest-wall about half an inch from the valve, but occasionally to the apex-beat, this depending upon the force of the vibrations. So that the diagnoses of lesions of the

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aortic orifice and valves are generally easily made out, but the feebleness of the regurgitant murmur at times renders its recognition of difficult appreciation to those who have a limited sense of hearing, or where the acoustic conditions of the chest have been altered by inflammation of the lungs, or by effusion into the pleural cavities, or by hypertrophy of the heart, or contraction of the chest-wall bringing it over a large space into sound-contact with the heart.

Lesions of the mitral valve cause murmurs. The obstructive will be heard at the apex-beat area alone, but the regurgitant almost exclusively over an area at the back near the spine, between the seventh and eighth vertebræ of the left side. The stream of regurgitant blood strikes upon the wall of the left auricle, which lies in sound-contact with the œsophagus, the aorta, and the intervertebral cartilage. Whenever the murmur, the acoustic sign, is absent from this area, it may be safely asserted that there is no regurgitation. If there are no conditions causing intraventricular murmurs—that is, unusual vibrations of the chordæ tendineæ—the true regurgitant murmur *may* be conducted through the cardiac walls backward to the apex-beat area. But this is of rare occurrence and can only be the case when plastic exudations upon the chordæ prevent their sound vibrations, or where the imperfection of the mitral valve is congenital and does not affect the normal vibrating conditions of the chordæ. Otherwise their excessive sound-vibrations drown those of the mitral lesions. These unnatural vibrations of the chordæ, representing mitral obstructive murmurs, demand special attention, as their frequent misapprehension is the cause of disastrous false prognostications.

We have endeavored heretofore to show that the joint sound-vibrations of the chordæ and the mitral valve in health give us the perfect first sound. Any cause within the heart or without, affecting the natural vibrations of the valve and chordæ, will alter the joint sound and cause an interventricular murmur, so sensitive are they to acoustic law.

If obstruction at the aortic orifice occurs, requiring greater muscular contraction of the ventricular wall, the cardiac muscle, following the universal law, hypertrophies under the increased exertion. Hypertrophied cardiac walls with greater power of contraction increase the tension of the chordæ, multiplying the vibrations, and the raised pitch causes discord in the first sound, and becomes a multiform

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apex-beat murmur. Plastic deposit on the valves or upon the chordæ, lessening their vibrations, will also cause a murmur. Whenever a murmur is the result of physical change it is properly an organic murmur, even when it may be removed by treatment.

There are other forms of interventricular murmurs: those owing to neurotic conditions outside of the heart, as from chorea, from exhausting hemorrhage, or from nervous excitation of any kind. Another frequent cause is adhesions of the pericardial sac to the lung, and of the lung to the chest-wall, producing an interventricular murmur conducted into the sound area of the adhesions, even when there is no lesion in the heart, which might deceive the very elect were it not for the continuance of perfect rhythm of the heart's cycle. These murmurs are conducted often through a portion of condensed lung, which fact being made out is confirmatory evidence of the general innocuousness of these murmurs—such as are frequently in the space around the apex-beat area, where the heart is covered by a thin portion of the lung, and for the same reason over the region of the pulmonary artery. Many times they are merely conducted sound-vibrations of the chordæ, and do not at any time necessarily denote organic disease of the heart.

If the heart were removed from its case and envelopment of lung, still performing its functions, we might hope to arrive with greater certainty to the knowledge of the exact local action of valvular murmurs. We could then place the ear or the stethoscope against the heart itself in search of the evidence of organic change. We could at least eliminate the outside causes of false murmurs by conduction. But the source of vibrations from valvular diseases or relative change in the capacity of the different chambers would still be within the muscular walls of a closed chamber, and absolute certainty could not be arrived at in that way. Is it, then, a wonder that we fail sometimes to make correct diagnoses by the ordinary methods in which we have been taught? But the application of the laws of acoustics is like introducing an electric light into the chambers of the heart and reading their secrets as by the light of day.

I have endeavored for many years past to make auscultation of the human chest scientific and more certain by the application of acoustic laws. If I have in any degree succeeded in directing the attention of the profession to the practical application of the laws of sound in diagnosis of the chest I shall be well satisfied.

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XI. The Technique of Vaginal Hysterectomy.

By JAMES B. HUNTER, M.D.,
SURGEON TO THE WOMAN'S HOSPITAL, NEW YORK, ETC.

In order that a capital operation shall commend itself to the profession two facts must be demonstrated in regard to it: First, the immediate mortality from the operation must be small; second, the results, immediate and remote, must be such as to show that the benefit to the patient is sufficient to compensate for the risks incurred. In regard to vaginal hysterectomy, ample evidence as to the second point has already been furnished by foreign writers; most recently by Secheyron. It may be assumed, therefore, that vaginal hysterectomy in suitable cases of malignant disease of the uterus has taken its place among the justifiable operations. My purpose is to deal chiefly with the first point, and to show that the operation may be so performed as to render the mortality very small. If it can be shown that the more radical operation entails but little more risk than does a high amputution, few surgeons would hesitate as to which operation should be performed. It may be mentioned here that in all capital operations statistics based upon a small number of cases have very little value. The more difficult the operation the greater will be the mortality in the earlier operations of every surgeon. Experience counts very largely in such operations as vaginal hysterectomy.

The principal dangers following this operation are shock, hemorrhage, peritonitis, and septicæmia. Many of the operations reported have occupied a long time, some of them more than two hours, and some nearly four. In such cases shock is very apt to follow. Rapidity may be considered an important element in all serious gynecological operations. A study of the cases of hysterectomy reported by the German surgeons, notably Martin, will show that the cases in which the patients succumbed to shock were those in which the operation was prolonged from one and a half to three hours. Much of the time lost is occupied in securing the important vessels by ligature. Péan certainly conferred a great benefit on surgery when he demonstrated the application of the hæmostatic forceps to vaginal hysterectomy; and it may be noted here that his

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claims are prior to those of Richelôt. I shall attempt to show that both theoretically and practically the forceps in this operation have a vast advantage over any form of ligature. I have now used the forceps for the principal vessels in eleven cases of vaginal hysterectomy in the New York Cancer Hospital, with two deaths, one from acute Bright's disease, and one from secondary hemorrhage in consequence of an imperfect forceps. In eight cases I have used no ligatures of any kind. The method of using the forceps will be made more clear if the other steps of the operation are described somewhat in detail.

The first steps of the operation are substantially the same whether the forceps or ligature is to be employed. One assistant should stand on the right of the operator, and on him devolves the chief responsibility. A second assistant, or an experienced nurse, is seated on the left of the operator, to hold the speculum and do anything else that may be necessary. The instruments are placed on a low table, within reach of the operator and his chief assistant. One nurse is assigned the sole duty of caring for the sponges. I prefer to have the patient on the back, brought well down to the edge of the table, the limbs being flexed and supported by assistants, or by the crutch, as in operations on the perineum. The largest Sims' speculum is then introduced, after thorough irrigation with a two per cent. creolin solution. The uterus is then drawn down by Bernay's utero-tractor. By pushing it back in place the line of union between the vagina and cervix is made clear, and at this line the incision begins, the uterus being first drawn downward and backward. Broad retractors are useful in some cases for lateral separation. With a curved, blunt-pointed scissors the bladder is carefully separated from its attachment, a sound being kept in it all the while, and manipulated by the chief assistant. The finger is then passed up until the peritoneum is reached, when that part of the operation is abandoned, the peritoneum not having been opened. The uterus is then drawn forward and a similar dissection is made on the rectal side. It is not important whether the anterior or posterior section is made first, but it is easier generally to do it in the order described. The next step is the separation of the lateral vaginal attachments. It is well to cut very cautiously here, and also with scissors, lest the uterine artery be prematurely severed. The peritoneum may now be separated anteriorly, and the finger hooked over the upper border of the broad ligament on one side. At this stage of the

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operation I usually pass a strong silk ligature temporarily over the broad ligament, by means of my projecting needle, and can thus control the upper border and draw it down in applying the second forceps. The forceps are then applied close to the uterus, and in such a manner as to include only the uterine artery. The handles of the forceps when properly placed should be tied with silk, to guard against the possibility of their becoming loose. The tissue included in the forceps may then be cut close to the uterus, the operator watching carefully for hemorrhage. A second forceps is then applied higher and made to include the remainder of the broad ligament and the ovarian artery. The same process may then be repeated on the opposite side. An attempt may then be made, by seizing the fundus with a large hook, to antevert the uterus. Another, and sometimes easier, method is to divide the uterine arteries first, and then to antevert the uterus and secure the ovarian arteries afterward. In cases where the vagina was small or the uterus large, I have found this plan a great saving of time and trouble. After the uterus has been anteverted the utero-sacral ligaments usually need to be divided. They may be seized with a long forceps before division, if they are large or vascular. It is well to seize every bleeding point, artery or vein, with forceps, some of which may be removed when the operation is complete. According to circumstances, the uterus may be drawn down in the axis of the vagina, or it may be anteverted or retroverted. The four forceps guarding the important vessels should all be secured by tying the handles after they are properly applied. The danger of prolapse of the intestines during the operation has been greatly exaggerated. Ordinarily they do not come into view at all. If at any stage of the operation the ovaries or tubes are seen, it is better to remove them, using a silk ligature, or, if practicable, a light forceps. The vagina is then lightly packed around and between the forceps with creolin-gauze. The use of styptic cotton at this stage is objectionable, as it is very hard to remove, and leaves an ugly cavity. If gauze or cotton in small quantity is placed up high, it should always be secured by strings to make sure of its easy removal. The projecting handles are enveloped in a mass of cotton, and so supported that they cannot drag or cause pain. If there is a sufficient supply and variety of forceps in readiness, ligatures will very seldom be necessary, nor will there be much opportunity for using the cautery, which I have never yet had occasion to employ in this opera-

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tion. The danger of injuring the peritoneum or intestines is greater with the cautery than with other means. The patient is then put to bed, and treated as after any serious operation. The bladder is emptied by the catheter at proper intervals. The bowels are moved on the third day, generally by means of three or four half-grain doses of calomel, in triturated form, given at intervals of an hour, and followed by a saline aperient, usually a sedlitz powder. The absence of pain after this operation is somewhat remarkable, and morphine or other anodynes are rarely necessary. Light nourishment, as milk and lime-water, milk and vichy, koumys, or peptonized milk, is given as soon as the stomach will tolerate it, which is generally from twelve to twenty hours after the operation. The forceps are removed after about forty hours; those which are applied to the large vessels, being tied, can be distinguished from the others and handled with greater care. It is often necessary to leave in the vagina six, eight, or even ten pairs of forceps. In one case, which did remarkably well, I left fourteen pairs attached. It is not always safe or practicable to follow any order in removing forceps, as all or most of the gauze must be removed first, and even then one pair is often in the way of another. The fresh gauze put in when the forceps are removed is disturbed as little as possible for three or four days. Very little force is necessary to remove the forceps, which usually come away almost of themselves as soon as they are unfastened. Sometimes a slight rotary movement is necessary to detach them. The least important ones should be removed first, if practicable, and those securing the larger vessels last. It will be found, practically, that the margins of the peritoneum fall together of themselves and close the opening. No sutures are necessary for the purpose of uniting the edges of either peritoneum or vagina. When the forceps are removed there is generally some discharge, and the gauze is saturated with a serous fluid without odor. No injections should be used at this time, nor should the speculum be introduced, or any vaginal examination made, without some special reason. A light tampon of gauze is then introduced, unless there is a free or offensive discharge. If proper care be taken, there need be no erosion or irritation of the vulva by the forceps. This is a very important point as concerning the subsequent comfort of the patient. In no one of my cases has there been any hemorrhage whatever after the forceps were removed. No vaginal injections should be given until after four days. There has seldom been any rise of

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temperature, there has been no peritonitis in any case, and no septicæmia. In some of the cases a large friable mass, the epitheliomatous cervix, has been broken down in the vagina during its removal, but in no case has there been any evidence of infection from that cause. At the end of the first week the discharge becomes very slight, and a digital examination shows a small opening in the vault of the vagina, barely admitting the finger. At the end of the second week there will be felt merely a puckered cicatrix, which in time becomes still smaller and closes entirely. I have never known any fistulous opening to remain. Healthy granulation has always taken place. The patients are allowed to sit up in bed at the end of the second week, and to get up at the end of the third week. One patient left for her home, at a distance, exactly three weeks from the day of the operation. All injections have been discontinued at the end of the third week, and no subsequent treatment has been necessary. When there has been any sign of a recurrence it has been in the edge of the wound at a point easily accessible for treatment. In this particular there is an advantage over the operation of high amputation, in which recurrence is not so easily detected, or treated when it does occur. Adhesion of the intestines to the wound has been reported in three cases. It has not occurred in any of my cases, and seems no more likely to occur after vaginal hysterectomy than after an ordinary laparotomy. Every precaution is taken to render the operation aseptic, but on account of the condition of the cervix this is often impossible. There has, however, been no evidence, in any case, as has been mentioned, of infection from that cause. There has been no prolapse of the intestine, and there has been no case of septicæmia. The evidence has all been in favor of the fact that shortening the operation lessens the danger of shock. The patients who recovered had all a remarkably easy and uneventful convalescence.

It may be safely said in favor of the use of the forceps in vaginal hysterectomy, that they save time. In some cases I believe their use saves from an hour to an hour and a half. In one case the entire operation occupied only thirty-five minutes. In several it was completed in forty-five minutes. They are also easier of application than the ligature, and they make more firm and permanent compression. In one case in which I used the ligatures, they did not come away for three weeks, and very much interfered with the process of healing. The forceps also favor drainage at the time when

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it is most necessary. Their removal causes no pain, and requires the use of very little force. There is less danger of injuring the ureters with the forceps than with ligatures, as they can be applied more closely to the uterus. In using the ligature on the broad ligament, there is always a possibility of retraction, and in the operation in question it is exceedingly difficult to reach the broad ligament when it has retracted. More traction on the tissues is required in applying a ligature than in applying the forceps. One other advantage they have over the ligature is the fact that the forceps themselves include a certain amount of tissue, which may be diseased, and which is destroyed by pressure, leaving a healthy granulating surface. That tissue cannot be safely dissected off at the time of the operation, and may, if left, be a source of subsequent danger.

Finally, to the inexperienced operator—and there must always be some inexperienced operators—the forceps offer a much better prospect of success than the ligature, as less skill is necessary for their application.

The instruments, etc., I have found necessary for vaginal hysterectomy are the following: Sims' speculum, largest size; reflecting depressor; retractors, two large and two narrow; volsellum forceps; artery forceps; tenacula, several; Bernay's utero-tractor; strong hook; scalpel; scissors, curved on the flat (blunt-pointed); projecting needle; needle-holder; needles; ligatures, silk and catgut; creolin gauze; sound for the bladder; Tait's forceps, different sizes, twelve; sponge-forceps, six; sponges; and creolin.

The kind of forceps is of some consequence, but I no longer try to include all the broad ligament in one instrument. I find a good Tait's forceps, having a bite of about one inch and a half, answer very well. Richelôt's forceps are too long in the blade, and needlessly heavy.

I have purposely avoided giving detailed reports of the cases, but it will be of interest to mention a few of the complications. In two cases I have unavoidably injured the bladder. No bad results ensued. One patient left the hospital with a small fistula, which can be closed at some future time. The other patient is still in the hospital, convalescent. In one case I was astonished during the operation by a sudden gush of a considerable quantity of fluid, which I supposed to be urine, until I found the bladder intact. It proved to be fluid from a ruptured ovarian cyst. In another case,

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the uterus was so large that it was with great difficulty drawn through the vagina, after all attachments had been entirely severed. The case was one of carcinoma confined to the fundus. The patient made an excellent recovery. In one other case the uterus was so entirely diseased that no hold could be obtained with the utero-tractor, or with any kind of forceps. They tore out when the least traction was made on them. No ligature would hold. The finger was passed up within the peritoneum, and pressure made on the fundus until the whole organ could be seized from below. In one of the most unpromising cases on which I have operated, the vagina was almost filled with a cauliflower mass, which broke down and bled profusely when touched. The mass was rapidly removed with the sharp scoop, regardless of the hemorrhage, the uterus seized by means of the utero-tractor, and bleeding controlled by drawing it forcibly downward. The uterus was then removed. The patient recovered.

Careful records of all cases are preserved, and will be published when the whole number is larger. The subsequent history of every patient is obtained as far as possible, with a special view of observing the frequency of recurrence of the disease.

DISCUSSION.

Dr. Thomas Addis Emmet, of New York: The advantages of this operation must turn on two points: First, the length of time in which the disease is likely to return after operation in comparison with that required after high amputation; second, the form of malignant disease present. An average of about two years is gained in prolongation of life by the so-called high amputation, or removal of as much of the uterus through the vagina as can be reached, going into healthy tissue and leaving the surface to granulate, or following the plan which I have adopted, of leaving no surface to heal by granulation, but trying to cover the stump and raw surface by vaginal tissue or bringing the lower surfaces together. If we do not gain more than two years in prolongation of life by hysterectomy, I do not see that there is much advantage in doing this operation. These remarks apply chiefly to epithelioma. If vaginal hysterectomy has a place, it probably will be confined chiefly to the treatment of sarcoma, which remains local longer than other forms of malignant disease. Probably entire removal of the uterus in such cases may be a better operation. But saving time is the great end in these operations. If it be determined to remove the

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uterus, I am not convinced that the vaginal method is the best, for we are working in the dark, and in the use of the forceps hardly know what we are catching up. Perhaps more times than we know of, the ureter is caught and injured. There is, as a rule, great loss of blood, and this fact discounts recovery of the patient very much. Dr. Lewis A. Stimson, of New York, has recently removed the uterus by a plan which promises to be better than any other yet adopted. That is, to open the abdomen, tie the ovarian and uterine arteries at the beginning of the operation, and from that time the procedure becomes almost bloodless. The uterus is separated from the bladder, and communication established with the vagina. Thus operating with the finger of one hand in the vagina and of the other hand in the abdomen, it would seem much easier to detect infiltration of tissue, and to avoid injury of the ureters. I believe it will be the coming operation when removal of the uterus is determined upon. In my own experience I have obtained better results from high amputation by the method I have mentioned than from hysterectomy. But the relative value of the two procedures must be determined by the relative prolongation of life in large series of cases.

Dr. ANDREW F. CURRIER, of New York: I suppose there will always be differences of opinion with regard to the propriety of vaginal hysterectomy, and also with regard to the cases proper for high amputation, so called. I now refer to cases of malignant disease. Different operators have given tables of results which show different degrees of excellence according to either method of operating. If we were to be guided entirely by these, we should be in a quandary as to what method to choose. Each man's experience in such matters will be largely a guide to himself and regulate his action. I might say, in passing, that one of the most successful operators in this class of cases has been Dr. Byrne, of Brooklyn, who, for a great many years, has used only the actual cautery. His results, as to the course of malignant disease of the uterus, have been as good as any one's who has operated.

There is a class of cases which has not been referred to in the paper, and in which vaginal hysterectomy should be adopted. I refer to obstinate cases of prolapsus of the uterus, especially in women past the menopause. It may be objected that such cases are suited rather for posterior and anterior kolporrhaphy. But in some instances these operations are done and do not prove sufficient. I have in mind a case thus operated upon less than two weeks ago by a skilful operator, a case in which the prolapsed uterus became strangulated in a degree as in an intestinal hernia. In such cases I believe vaginal hysterectomy is indicated, and that it is much easier than in cases where the uterus

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is bound by adhesions, or infiltration of the tissues of the broad ligament, or conditions which make it impossible to be drawn down.

As to the facility of doing the operation, I think the plan suggested by the reader of the paper is certainly to be commended. Above all things, one who is going to do this operation should have his anatomy at the end of his finger. It is inadvisable, almost criminal, for one to undertake vaginal hysterectomy who is not prepared to meet the various complications which may arise. I think that by the use of these forceps the operation, even in the hands of one of moderate skill, is much shortened. I also think the element of heredity is important with regard to the prognosis. It is yet too soon to say whether hysterectomy for cancer is to have a permanent place among surgical procedures. Certainly the records of some operators have been good, but whether they are sufficient to recommend this operation to the minds of the profession in all, or a majority, of the cases of cancer of the uterus, is a somewhat difficult question to decide.

Dr. W. W. POTTER, of Buffalo: It seems to me that if any method can be devised by which a woman suffering with cancer of the uterus can have her life prolonged for a reasonable period, in which there will be a fair degree of comfort, that operation is certainly to be commended. I presume supra-vaginal amputation and the operation detailed by the essayist are not to be presented as competitive operations in this discussion. The only question presented by Dr. Hunter was, I believe, that of the technique of vaginal total extirpation of the cancerous uterus. On this question, I think, there is hardly any room for difference of opinion. But in his graphical description of the details of the operation, he omitted to speak of a point which I believe to be true, that the operation is of no great avail when there is circumuterine infiltration; in other words, when the cancerous disease has passed beyond the confines of the body of the uterus. In all other respects he has covered the ground; and it is possible that he mentioned this, but I did not hear it.

Dr. J. B. HUNTER: With regard to the time of recurrence of the disease, I have followed one case four years since the removal of the uterus, and she is still absolutely healthy, and serving as housekeeper in the cancer hospital. As to hemorrhage, there need be no more than in ordinary operations on the cervix. In one case which I operated upon a short time ago, there was not as much hemorrhage as in an ordinary operation on the cervix or perineum.

As to the operation performed by Dr. Stimson, it is a modified Freund's operation, and, although skilfully done by Dr. Stimson, it involved the additional risk of opening the abdomen from the other side and infecting the peritoneum. That operation is adapted to cases

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of fibroid tumor rather than of malignant disease. With regard to Dr. Potter's remarks, it was not my intention to speak of selection of cases. If the vagina were involved, I should not do the operation. I think its success hereafter will depend upon the selection of suitable cases. If those are included in which the vagina is involved, the results will not be so good.

XII. Galvanism in Gynecology.

By WILLIS E. FORD, M.D.,
UTICA, N. Y.

If a constant current of electricity be passed through living tissue certain changes are brought about, due partly to chemical decomposition and the separation of the fluids of the tissues, and partly to a change in the nutritive processes produced by polarization of the ultimate molecules of matter. The results obtained depend wholly upon the character of the current used. From the study of electricity itself and a proper appreciation of the various qualities of a current, as much may be expected as from the study of the morbid conditions for which it is prescribed. Dynamic electricity of great volume or ampèrage is capable of great destructive power just in proportion to the quantity of zinc acted upon within the battery. While such a current may be capable of producing cautery effects, it will not push its way through dense tissue for any distance. For this purpose, a number of independent elements connected up in a series is necessary. The voltage or the pressure power of a current is as important, therefore, in therapeutics as is quantity or ampèrage. It has been found that a current that is strong enough to push its way through a fibroid tumor of the uterus as large as a cocoanut, must possess the pushing power or tension of from twelve to sixteen volts. If, therefore, the battery used for the purpose of dispersing fibroid tumors has this requisite voltage, the ampèrage may vary within certain limits and yet good results be obtained.

Indeed, the tension or voltage of a current has not yet been shown to be the dangerous element to deal with, though one might think so from what has been written on the subject. The volume of the current is what determines the electrolytic power of a battery,

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and if not interrupted or broken there seems to be little danger in its use up to the cautery point.

In gynecological practice, at least, there seems to be no need of a current of higher voltage or tension than is necessary to make it certain that it pushes its way through the tissues to be acted upon. A comparatively small number of elements only are necessary, from twelve to twenty, provided the generating plates are large and the internal resistance of the battery is small. In the single-fluid batteries, the internal resistance is reduced to the smallest amount by having the zinc and carbon plates as near to each other as possible.

A battery with large cells gives no greater voltage than a battery with small cells and small elements, while the ampèrage of the battery depends wholly upon the size of the elements used.

I am convinced that one of the reasons why galvanism is not more generally and successfully used, is that portable batteries, or batteries having but a single fluid, as they are constructed by instrument-makers, are wholly inadequate for the purpose. The two-fluid batteries, on the other hand, are so expensive that few practitioners possess them. The ordinary bichromate of potash battery, which is unquestionably the best form of battery, will answer every purpose if the cups in which the elements are immersed are sufficiently large so that the current will not run down. Such a battery of fifteen cells holding a quart each, with some simple contrivance by which the zincs and carbons can be readily lowered into the fluid, makes a most perfect instrument for gynecological practice. The ampèrage, or volume, of a current is easily regulated by the depth to which the zincs and carbons are plunged into the fluid, while the tension, or voltage, or pressure of the current is regulated by the switch board, depending entirely upon the number of cells used.

If the voltage is too great, more pain is caused than is necessary, while the current may have too small a volume to possess much electrolytic power. On the other hand, the volume of a current may be so great as to cause sloughing of tissue at the point of contact with the vaginal or intra-uterine electrode, and yet the tension be so little that the milliampèremeter does not mark over 60 or 80. It ought, therefore, to be possible to change the relative quantity as well as tension of a current at will, and adjust the quality of the current to each case.

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It is not easy to accomplish this in stationary batteries, and almost impossible to do it with a current taken from an ordinary dynamo.

Some time ago I had a battery constructed by an ordinary carpenter for a small sum, which has given more satisfaction than any generator I have used. It consists of a box large enough to hold a dozen quart glass jars in two rows, and over them a sliding shelf in which the zincs and carbons are arranged. In the top of the box is a wooden roller, around each end of which a leather strap is fastened, one end of the strap being fastened to the sliding shelf below. A crank on the outside of the box moves the roller and raises and lowers the shelf, to which the elements are attached, to any desired point. The elements are connected up to a switch board on the outside of the cover of the box, and the milliampèremeter stands beside it so that the box itself need be opened but rarely, and evaporation of the fluid into the office is thus prevented.

The zincs and carbons are five inches long and three inches wide, and the battery will run for an hour or more without running down, and needs refilling once in two months, perhaps. At St. Luke's Hospital I had the sixty-cell cabinet battery changed into a twenty-four-cell single-fluid battery, with this device of a sliding shelf and with the greatest advantage.

I have been thus minute in describing apparatus, because the results in practice have seemed to depend largely upon the qualities of the current used. A galvanometer is of little use, and with this simple battery neither resistance coils nor water rheostat are necessary. The chief guide is the milliampèremeter, though this instrument sometimes marks the voltage of the current chiefly. If, for instance, in the treatment of a fibroid tumor twelve or fifteen cells are necessary to cause this instrument to mark 100, the elements are then lowered further down into the fluid; the needle will not change, even though the vaginal electrode may cauterize from the volume and density of the current. Pain, however, in the vagina will be intense before any destructive change is produced, and this is, so far as I know, the only guide to the operator as to the safety of a current of great volume. On the other hand, I have repeatedly used a current of 200 milliampères for a number of minutes at each sitting, and have seen no change in the vagina afterward, and there was no pain in the vagina while the current was passing.

I have found that if twelve or fifteen cells are used it is not safe

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to plunge the zincs so that more than about twenty square inches of surface is exposed in each cell when the fluid is fresh.

If pain is produced by a vaginal electrode the ampèrage ought not to be increased, though the voltage may be increased.

My first paper on the use of the stronger galvanic current was published in the *Medical Press of Western New York* for April, 1888, and stated what was new at that time, namely, that peritoneal adhesions about the pelvic organs, and even about the abdominal viscera, can be effectually removed by means of the stronger galvanic current. These conclusions were reached from the behavior of fibroid tumors under treatment in cases in which there had been localized peritonitis with fixation both of the tumor and of the adjacent organs. Pain was speedily relieved, and the tumors became movable, even before there was any perceptible diminution in their size. This occurred so uniformly that it seemed evident that galvanism must be an efficient agent for the removal of organized inflammatory exudates.

A much larger experience since that time has confirmed the views then expressed, and I do not now think it worth while to attempt the removal of bands of adhesion about the pelvic organs in any other way. An enlarged uterus that is fixed in a malposition can more certainly be restored to its normal size and mobility by galvanism properly applied from a dozen to fifteen times than it can by any other method I have ever tried or seen tried, in double the length of time. It is not necessary to put a woman in bed and give her daily douches and frequent applications of iodine, boroglycerites, etc., to cure her of the results of a pelvic cellulitis or a localized peritonitis, for galvanism will do it more speedily and with less trouble.

Much more experience, however, will be required to improve upon the present methods of administration and to determine the limitations of the agent.

Meanwhile, my own experience has led me to the conclusion that the current used ought not to be the same in cases of simple hyperplasia of the uterus, or subinvolution, or in cases of chronic pyosalpinx, as in the denser fibroid tumors. In the latter, it has usually been found that a current having comparatively small ampèrage, but high voltage, is the most useful. On the other hand, the same current, when passed through a mass of exudative material surrounding or near the uterus, has in several instances excited a new

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inflammatory process, and has not secured ready absorption as in cases in which the current had greater electrolytic power, and in which the milliampèremeter marked only 80 to 100.

That a proper current of galvanism will stop the growth and diminish the size of uterine fibroids is no longer questioned, but how much may be accomplished by this agent in the removal of products of inflammation has not yet been fully determined.

During the year 1888 I applied the stronger galvanic current in 64 cases, of which 31 were in St. Luke's Hospital and 34 in private practice.

While no table of cases and results can be made, it may be of interest to state that 19 were cases of fibroid tumors of the uterus, 11 being subserous, 4 submucous, and 4 intramural.

In no case did a subperitoneal or an intramural fibroid disappear entirely, no matter how long the galvanism was used, but the growth was checked and the troublesome symptoms disappeared. Very large masses, with accumulations of fluid about them, improved most rapidly, and the fluid disappeared in all cases. The current in such cases was of a strength of two hundred milliampères, and was sent directly through the tumor, from side to side of the abdominal wall. In other cases, the negative electrode was placed in the vagina, against the projecting mass, the positive electrode being upon the abdomen, and consisting of a large dispersion plate of copper, covered with French punk and chamois.

A small bleeding fibroid disappeared entirely in three instances, and in the other one the bleeding was checked, and in all the general condition of the patients was most markedly improved.

My own experience has been that the intramural growths are the most favorable ones for galvanism.

There were 5 cases of chronic pelvic peritonitis, with extensive adhesions; 7 of localized pelvic peritonitis, in which the adhesions were limited to one locality, not including 9 cases of retroversion of the uterus, with fixation; 4 of hydrosalpinx, 4 of chronic pelvic cellulitis, 3 of which were discharging, one into the bladder, one into the rectum, and one into the vagina just in front of the cervix. There were 10 cases of chronic metritis, 1 of chronic ovaritis, 3 of acute anteflexion uteri, and 2 of subinvolution.

The negative pole was always found to exert a better influence over bleeding fibroids than the positive. The vaginal electrode should be as large as possible in order to avoid tissue destruction

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from too great density of the current, and is best made by hammering a thin sheet of platina over an oval copper disk at the end of the hard-rubber handle. The conducting wires of insulated copper, not tinsel cord, should be in all cases fastened to the electrodes by binding-posts. The intra-uterine electrode is made by hammering a thin sheet of platina over the end of a large copper wire, the latter being insulated by a rubber catheter.

A current of fifty to one hundred milliampères was all that was necessary to remove inflammatory exudates in every case, so that the conclusion was reached that persistency and skill were all that were necessary in such cases to ultimate success, if the general health were fairly good.

The rapid absorption of fluids under the influence of galvanism has surprised me, and notably so in two cases in which a large amount of fluid free in the abdomen surrounded large fibroid tumors. In both of these cases a large current of two hundred milliampères was sent directly through the abdomen from side to side, and both the women, who had been bed-ridden, got about the streets in a month, and were able to come to my office.

Though I have had but three cases of discharging pelvic abscess under observation in the year, I am convinced that galvanism is safer and more certain than surgery. Two got well and one was lost sight of when much improved.

In the cases of chronic metritis, of ovaritis, hydrosalpinx, and subinvolution the current used was of as large ampèrage as could be borne without cauterizing the cervix or vaginal wall, with the milliampèremeter marking about 100. Slight inflammatory symptoms appeared in a few instances of comparatively recent circum-uterine inflammation when the current used had been of high tension. I have never seen any harm come from sending a current of two hundred or two hundred and fifty milliampères directly through the abdomen from side to side even when the ampèrage was large enough to cause general vesication under the electrodes. In these cases, however, each electrode was from six to eight inches square, and the density of the current was therefore not very great.

Healthy tissues, in which there is a normal quantity of fluid, furnish a good conducting medium for electricity, while the new connective tissue, which contains almost no bloodvessels, is a very poor conductor, and is thus susceptible to the action of the current —a point made in my former paper in favor of electrolysis in peri-

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toneal adhesions. Since that time I have seen no more reasonable theory advanced in explanation of the phenomena observed in these cases.

I have not used the puncturing needle of Apostoli in any case, though I brought one with me from Paris fully intending to do so. In feeling my way along, however, with this large current of galvanism I got so much better results than were expected that I did not try the puncturing, and soon I heard of the dangers in its use, and so did not try it. I have thus far had no serious accident with this agent. The general health of patients frequently declines somewhat when under active treatment, and the results are not fully appreciated in most cases until two months after the treatment has been discontinued. I have been surprised to note the steady diminution of fibroids for months after the galvanism has been discontinued. The whole number of applications varies from twelve to twenty. The intervals between sittings may vary from two to six days, and the current may be passed from eight to fifteen minutes each time.

XIII. The Disorders of Menstruation.

By ANDREW F. CURRIER, M.D.,
NEW YORK.

It is a peculiarity of the functions of the body that, when performed normally, they are performed painlessly and without the knowledge or consciousness of the individual. When an individual becomes aware that this or that function is being performed—that is, when his attention is attracted with an intensity which he cannot dismiss, his emotions being involved to any degree between simple discomfort and the most diabolical pain—there is no question that one of the functions is deranged, disturbed, disordered.

I do not know whether the argument has ever been made that, since it was once said to woman, "I will greatly multiply thy sorrow and thy conception, in sorrow thou shalt bring forth children," therefore, it follows that menstruation should be included in the primal curse. Certainly "parturition hath few pleasures," but it cannot be argued from that fact that menstruation should abound in pain.

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It has been asserted by various authorities, more as a matter of personal belief and opinion than as a fact founded upon anatomical or physiological conditions, that menstruation is, or always should be, attended with more or less pain; but with all deference to such authority, that is not my belief—indeed, if it is normally accomplished, it should be as painless as digestion, or secretion, or assimilation. In this opinion I am in accord with Meadows, who made an elaborate discussion of this question in the Harveian Lectures for 1881 (see *Med. Press and Circular*, xxxii. 487).

Menstruation, in its simplest meaning, signifies a discharge of blood, epithelium, and glandular secretions from the uterus, mingled with more or less of the secretions of the vagina and vulva, recurring each lunar month, continuing from three to six days, due to a stimulus which has not yet been absolutely determined, which produces congestion of the entire genital apparatus, and attended by both direct and reflex phenomena which seem to depend mainly upon the congestion. From this definition as a basis, all the irregularities of menstruation may be wrought out.

There have been much patient work and ingenious speculation in regard to the process which actually occurs with menstruation. The subject was deemed of so much importance that a special discussion of it occupied a portion of the attention of the International Medical Congress held in Paris, in 1867, many valuable papers being read and discussed.

Physiologists and clinicians have alike failed to settle conclusively whether the entire mucous membrane is shed with each recurring menstrual epoch, or only certain epithelial layers (Leopold, John Williams, Möricke, Wyder, and others); whether the menstrual discharge means an aborted decidua (Pouchet, Ercolani, Tarnier, Putnam-Jacobi); what may be the influence and bearing of the Fallopian tubes in the matter (Harley, Tait), and many other important questions, into the merits of which it is not intended to go at this time. Beigel's theory concerning menstruation is, that it is due to an impulse in the genital sphere, an expression of which is sexual excitation, just as there is a regular expression of need for rest, food, etc. Hyperæmia follows, especially in the pelvic organs, and menstruation is the result.

Such a theory is too abstract and vague, and demonstrates nothing. A more reasonable theory is that of Pflüger, which makes menstruation dependent upon the maturation of the ova. As the

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Graafian follicle swells, vasomotor nervous influences are excited, which become diffused through the vascular system and cause congestion The congestion involves the ovarian circulation, and contributes to the bursting of the Graafian follicle, the liberation of the ovum, and the consequent hemorrhage. This theory is also unsatisfactory, for it requires that ovulation should be attended by external hemorrhage, and it is not impossible that one may occasionally be entirely distinct from the other. Upon this point Dalton ("Report on the Corpus Luteum," *Trans. Amer. Gyn. Society*, ii. p. 111) remarks:

"If we regard the rupture of an ovarian follicle and hemorrhage from the uterus in menstruation as two phenomena normally coincident, excited by a common cause, and both subservient to the same general function, we must still recognize the possibility of either one being deranged independently of the other" (p. 137).

Pouchet, who devoted a considerable portion of his life to the investigation of the subject of menstruation, leaving a magnificent memorial of his work in his *Théorie positive de l'ovulation spontané*, was the first one, so far as I can ascertain, to recognize (1847) the analogy between the mucous membrane which is shed from the uterus of all unimpregnated women, to a greater or less extent, each month—the *decidua menstrualis*—and the decidua which forms an enveloping membrane to the fœtus. Or, perhaps, it is more correct to say that he recognized that a decidua is formed each month, which is cast off if impregnation does not occur. His theory of menstruation, like Pflüger's, is, that it is dependent upon ovulation, and that the commotion aroused by the maturation of ovules not only excites the genital apparatus, but reacts upon the whole individual (*Op. cit.*, p. 201).

Goodman opposes the ovular theory (*Trans. Amer. Gyn. Society*, ii. p. 650), on the ground that menstruation is presided over by a law of monthly periodicity, which is the resultant and exponent of recurring physiological acts. This law is manifested only in the economy of the female, and in connection with the function of menstruation. He believes that the process by which the monthly cycles are accomplished is seated in the ganglionic nervous system.

Whatever be the correct theory as to the impulse which causes the periodical ovarian congestion, and coincidently the congestion of the other pelvic organs, the most superficial examination of the ovaries shows a relatively extraordinary system of arteries, which

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one could hardly conceive, by any possibility, to be necessary for the ordinary nutrition of the organs; and, hence, they could only be designed for repeated fluxions and engorgements. The great plexuses of veins contiguous to the ovaries, in the broad ligaments, testify also of the volume and activity of this portion of the circulation, and the possibilities for its derangement. Together with these facts must also be borne in mind the wonderful nerve supply of the ovaries by the renal, the ovarian, and the superior aortic plexuses. Therefore, given a highly congested and engorged ovary, and direct or indirect nerve communication with the most important structures and organs of the body, we can readily understand why so many women are in such a condition of unstable equilibrium with each recurring menstrual epoch, and why so many disturbances in parts remote from the ovaries are properly referred to them as the *fons et origo*.

The argument has been made that the function of menstruation is one which has been engrafted upon women as a result of civilization (Stirton, *Glasgow Medical Journal*, January, 1887, p. 1). In so far as this implies that under favorable environment, which is a very comprehensive term, women menstruate with less inconvenience, and likewise give birth to more and healthier children than under less favorable environment—that is, in the savage or barbarous condition, it is probably true, just as in stock-raising and breeding the results are much more satisfactory, in every way, when the creatures are well-fed and housed; but we must not forget that man is the end of the scale in evolution, and that the higher intellectual facilities seem to be developed at the expense of the lower animal ones. A fish has myriads of offspring, an elephant perhaps one. Your Shakespeares, and Washingtons, and Newtons, and Napoleons, and Goethes, and Carlyles have not been prolific. So of the George Eliots, the Madame de Staels, and the Elizabeth Brownings. That is to say, the greatest intellectual development in women is not favorable to fecundity, and probably is not favorable to ovulation, though the latter statement remains to be proved. The congestions in such women which preponderate are cerebral rather than pelvic; therefore, civilization in its most complete development may be unfavorable to menstruation. Certainly menstruation is not a flower of *modern* civilization, for in almost all nations and races which have left records of their habits and customs this function is referred to. The Bible record of its existence among

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the ancient Hebrews is clear and explicit, and it is plain that it was not a rudimentary function then.

Instead of regarding menstruation as an engraftment upon civilization, it would seem more reasonable to consider it as the development and perfection of a function associated with the reproductive system which has been observed with greater or less distinctness in almost every variety of animals the habits of which have been subjected to careful study. The testimony in this direction is most abundant and most convincing. The females of certain insects exhibit decided changes of color during the breeding season. In reptiles and fishes the period in which the eggs are deposited is marked by a certain degree of excitement and by hyperæmia of the orifices of the generative canal. Laycock observed that tortoises exhale an odor of musk, and lizards secrete an odorous, fatty liquid when the sexual appetite is aroused, and Darwin observed that during the breeding season the anal scent-glands of snakes and lizards were in active secretion. (See Wiltshire on "Comparative Physiology of Menstruation," *Journ. Comp. Med. and Surg.*, iv. 28; v. 58, 163, 254.) Among birds the reproductive season is marked by brighter plumage in the female than at other times.

Ascending in the scale, we find not only that the sexual appetite is aroused with something like periodicity, but that it is accompanied with more or less discharge from the generative passages, in which the sanguineous elements increase the higher we advance in the scale. With wild animals the sexual appetite is more intense when food and shelter are sufficient. In some of the domestic animals it recurs with a sanguineous or sanguino-mucous discharge with almost as great regularity as in women, and has been thus observed in mares, asses, ewes, sows, bitches, and cats. With animals having hollow uteri the external hemorrhage is less profuse than in those in which the uteri are thick and nearly solid; therefore, while the transudation into the uteri of bitches, sows, and cats may be abundant, the external hemorrhage may be quite insignificant.

In those primates in which the womb most resembles that organ in woman—that is, in the monkeys—the external hemorrhage is quite similar to that which occurs in woman. This fact has repeatedly been observed in monkeys kept in zoölogical gardens, and the bleeding has sometimes been so profuse as to excite marked concern on the part of their keepers. Buffon mentions eleven varieties of apes, baboons, and monkeys, in which menstruation had been ob-

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served. To mention, in addition, the names of Cuvier, Saint-Hilaire, Ehrenberg, and Raciborski as observers of facts similar to the foregoing, is sufficient to show that the subject has received critical attention from the most careful and eminent investigators.

Among wild mammalia the analogue of menstruation was observed by Bartlett, a keeper of the zoölogical gardens in London, in elephants, hippopotami, zebras, jackals, and monkeys. Saint Cyr and Flemming, distinguished veterinarians, have published the results of their observations as to the existence of a sanguinolent œstral discharge in the domestic animals resembling the catamenia in women, and they maintain that though it may not be so invariable, so copious, or so well defined as in women, this fact is often due to its retention in the vagina and its passage outward with the urine. Modern obstetricians and clinicians, including Velpeau, Trousseau, Cazeaux, and Tarnier, have all observed the analogy between menstruation in woman and a periodic flow in other mammalia, especially in monkeys and the domestic animals.

It would, therefore, seem warrantable to conclude with Wiltshire, from whose admirable lectures most of the foregoing facts have been obtained (*op. cit.*), that menstruation agrees with other functions of the animal economy in displaying subordination to the law of evolution. It may be indebted to civilization for certain fostering influences, but it does not originate in civilization but in a law which applies to the reproductive system of vast series of types and forms of animal life.

If this review of the comparative physiology of menstruation has seemed tedious, it is hoped that it may not be valueless as an introduction to the consideration of the abnormalities of the function.

Normal menstruation, then, implies a flow of blood sufficient to relieve congestion—but not enough to cause weakness or exhaustion, unaccompanied with pain, by way of the genital passages. Conversely, abnormal menstruation implies an insufficient flow of blood, or an excessive flow—these terms being relative, for *insufficient* and *excessive* vary greatly with individual condition; or it may mean a flow that is accompanied with pain, or proceeds by other channels than the generative passages.

Disorders of menstruation may, therefore, be classified as follows:

1. Amenorrhœa, absence of the menstrual flow.

2. Dysmenorrhœa, the condition in which the menstrual flow is obstructed.

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3. Oligomenorrhœa, scantiness or insufficiency of the menstrual flow.

4. Polymenorrhœa, excessive menstrual flow.

5. Atopomenorrhœa, menstruation or a menstrual flow which is out of place, or unnatural, or unwonted. This term corresponds with the expression vicarious menstruation, and its equivalents, ectopic menstruation (Barnes), ataxie menstruelle (Raciborski), xénoménie (Flamant).

The terms metrorrhagia and menorrhagia have been used to signify, respectively, excessive bleeding from the womb irrespective of menstruation, and excessive menstrual flow. I have introduced the term polymenorrhœa as a substitute for menorrhagia.

The classification which has heretofore been in use, is that which was adopted by Henry Bennett (see *Lancet*, 1852, i. 35, 65, 215, 328, 353) and others, and seems to me to be deficient in definiteness.

Inasmuch as menstruation is influenced to so great a degree by such conditions as race peculiarities, nervous impulses, blood-pressure, heart force, and resisting power of vascular walls—internally, and atmospheric pressure, humidity, heat, cold, and wind currents (that is, by meteorological elements)—externally; we can readily understand why its equilibrium should be so unstable—indeed, there is probably no function that is so delicately poised, which accounts for the fact that we see so many illustrations of menstrual disorders and disturbances.

Certain general principles are usually admitted by those who have investigated this subject, and among them are the following:

1. Races or tribes that are least removed from animals most resemble animals in respect to this function. Thus Stirton (*Glasgow Med. Journ.*, 1887, p. 1) mentions an aboriginal and very degraded tribe in South Africa, of which the women menstruate only at irregular periods. When menstruation is first established the discharge is merely an abundant mucous secretion, and only after indiscriminate intercourse has taken place for some time does blood appear with the menses, and then only in small quantities.

2. So-called nervous women, or women whose nerves are very readily stimulated or excited, seldom menstruate without discomfort. Such women frequently suffer from dysmenorrhœa, many from oligomenorrhœa. A sudden emotion of joy, fear, or sorrow may check their flow; or it may be brought on prematurely or profusely by lascivious thoughts.

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3. Influences located in the vascular system may, in themselves, be sufficient to determine great abnormalities in menstruation. A weak heart forces too little blood into the pelvic channels, the blood-pressure is slight, and the hemorrhage is correspondingly small. Or the heart works violently; as the time for menstruation occurs there is high blood-pressure with abundant power to overcome the resistance of the vascular walls, and the hemorrhage is profuse.

4. Great elevations, in which the atmospheric pressure is greatly reduced, must favor profuse menstruation as the pressure in the engorged pelvic vessels becomes greater than the external pressure. This remark applies more particularly to sudden removals to, and short residence in such localities, for acclimation may be readily acquired if no serious disease involving the vascular system exists —in fact, in certain mountainous districts of France and Switzerland it has been observed that the native women are prone to suffer from irregular and scanty menstruation, notwithstanding the low atmospheric pressure.

5. A humid atmosphere is frequently a concomitant and probably a cause of amenorrhœa, or dysmenorrhœa, or oligomenorrhœa, on account of the difference between the pressure of the gases and fluids within the body and the atmospheric pressure. These conditions are frequently observed in women who are about to menstruate at a time when the air is nearly saturated with moisture, also among those who sojourn by the seashore during the summer months, and in connection with ocean voyages. In New York City and probably in any great port of entry, one sees many immigrant women with whom amenorrhœa persists for months after their passage across the Atlantic. It is usually the young and unmarried who are thus affected, and the condition assumes great practical importance from the fact that one is obliged to determine as to the presence or absence of pregnancy.

6. In hot climates women menstruate earlier than in cold. It is not unusual for puberty to be attained between the ages of eight and twelve years in tropical countries, and the well-authenticated stories of precocious maternity which are not uncommon in India, and other countries of that latitude, show the great influence which heat exerts in developing and maturing animal as well as vegetable life. Rouvier, in an excellent statistical paper concerning menstruation among the heterogeneous population of Syria (see *Ann. de Gyn.*, 1887, xxvii. p. 178), states that among 742 cases of women of ten

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Oriental nationalities seen by him in a professional capacity in the city of Beyruth, the average age at the first menstruation was twelve years and ten months. The youngest menstruated for the first time at the age of nine and the oldest at nineteen. Among the Bedouins he found that menstruation began at the age of eleven. Menstrual life, according to Wiltshire (*op. cit.*), is usually begun in the summer-time, and the same author thinks that the seasonal influence underlies the genesial influence in all creatures, and is a trace of a primordial condition governing reproduction. Heat is also an influence which tends to shorten the menstrual life. It is said that some of the Arab women cease menstruating between the ages of twenty and thirty (see *Real Encyclopædie*, article "Menstruation").

Cold—that is, extreme cold—is an agent which at all times and in all latitudes is unfavorable to the regular and easy performance of the menstrual function. As one travels toward cold climates the establishment of the function seems to be proportionally retarded. In northern European countries it is not at all uncommon for females to menstruate for the first time at the age of seventeen or eighteen, as the statistics of Leudet's table show. This was published in the *Transactions of the International Medical Congress* held at Paris, in 1867 (p. 162), and the following are some of its important statements:

Average age for the establishment of menstruation from a large number of observations in:

	Years.	Months.
Swedish Laponia	18	
Copenhagen	18	9
Norway	16 to 18	
Göttingen	16	
Stockholm	15	6
England	15	6
Bombay	13	
Calcutta	$12\frac{4}{10}$	

Heinricius examined the histories of 3500 women of the working class in Finland, and found that in that cold country the average age for the first menstruation was fifteen years, nine months, and twenty-five days (*Centr. f. Gyn.*, 1883, vii. 72).

It is thus an unquestionable fact, which entirely controverts the opinion of Bennett (*op. cit.*) and others, that the influence of climate upon menstrual function has not been exaggerated. Henning is responsible for the statement (see *Centr. f. Gyn.*, 1887, No. 17, p. 274)

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that the Greenlanders and Laps menstruate only once in three months, and the Eskimos not at all in winter; also, that the women of Terra del Fuego do not menstruate at all or only infrequently during the winter. The effect of cold in suddenly checking the menstrual flow, illustrations of which are common enough among washerwomen and others who intentionally or unintentionally disregard the proper precautions against disturbance of the menstrual flow, is well known; and the subsequent pain and annoyance which frequently result, are equally familiar, and furnish an instructive commentary upon the fact that nature imperiously demands compliance with her laws, ignorance not being a valid excuse for their violation.

Returning again to the classification which was proposed, disorders of menstruation are to be considered as:

I. Amenorrhœa (ἀ not, μῆνος monthly, ῥεῖν to flow).
II. Dysmenorrhœa (δῦς bad or difficult, μῆνος monthly, ῥεῖν to flow).
III. Oligomenorrhœa (ὀλίγον a little, slightly, μῆνος monthly, ῥεῖν to flow).
IV. Polymenorrhœa (πολύ much, abundantly, μῆνος monthly, ῥεῖν to flow).
V. Atopomenorrhœa (ἄτοπον out of place, unwonted, μῆνος monthly, ῥεῖν to flow).

I. Amenorrhœa means absence or disappearance of the menstrual flow. This condition obtains with those who have passed the menopause, whether in the ordinary course of nature, or as a result of disease or traumatism. In some cases, no valid cause for its existence is discoverable. The term is not strictly applicable to those with whom the menstrual secretion is retained within the pelvic organs on account of obstruction of various kinds. It may be temporary or intermittent, as in the case of those who dwell in a very humid atmosphere, or in very cold climates, in connection with the pregnant state, in wasting diseases, etc.

The question has often been raised, whether amenorrhœa has any significance or influence upon the general health. In my opinion, its influence in this direction may be decided, but I am familiar with cases in which it has existed for periods of five to seven months, in which the cause could not be ascertained, the patients enjoying the best of health during these periods, and showing no

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substitute for menstruation by abnormal bleedings or other phenomena. Such patients usually consult the physician under the superstition that continued absence of the menstrual flow may be an indication of approaching pulmonary phthisis. One hundred and fifty years ago this question was elaborately discussed by Senfft, in a Latin treatise published at Leipzig. (An fœmina sine catameniorum fluxu perfecta frui possit sanitate, Lipsiæ, 1740.)

Whether menstruation coincides invariably with ovulation is at present immaterial, though we know from the vast experience which has accumulated since the era of abdominal surgery began, that with the removal of the ovaries menstruation ceases in the majority of cases after a short period. It seems evident that the monthly flow is the medium by which the recurring congestion of the pelvic organs is relieved, whether directly associated with the discharge of an ovum or not. If the congestion does not recur, whatever be the cause, amenorrhœa is insignificant; if it does recur, it must follow the law which governs congestion in other parts, and unless relieved by the emission or dispersion of the blood, trouble must invariably result. Such trouble will be indicated by a sense of pain and fulness in the pelvic region; by pain in the loins from involvement of the renal plexus of nerves; and by pain in the head from communication with cerebral nerves and centres. That such communication exists, is demonstrable by the pain in the head, especially in the occipital region, which is frequently elicited by the pressure of the examining finger upon inflamed circumuterine tissues.

Amenorrhœa is not usually annoying to those who suffer from pulmonary phthisis and other wasting diseases. Dalton has reported cases in which it existed in young women for many months before death as the accompaniment of disease of the liver, kidneys, or heart. It is usually troublesome in young women with whom menstruation is not fully established, and in those cases in which there is mechanical obstruction of any kind to the passage outward of the blood from the vessels. Not infrequently atopomenorrhœa results if mechanical obstacles to the normal outflow are present.

II. Dysmenorrhœa.—This term, as it is commonly used, is the least exact of any of the terms in the proposed series. It is almost invariably associated in the mind of the physician with pain, and yet there are doubtless many cases in which there is difficulty in relieving the engorged vessels during menstruation, true dysmenorrhœa, in which there is little, if any, pain. The term in-

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cludes those cases in which, though there is a flow of blood, the blood is ejected or emitted with difficulty. In its broadest sense, dysmenorrhœa is the condition which is opposed to normal menstruation, and in that sense it includes all the disorders of menstruation. The causes of the difficulty may be mechanical or chemical—that is, the fault may either be in the blood or in its surroundings, and pain is not infrequently a symptom or announcement of the condition. The pain may be referred to the region of the uterus and be of a grinding, bearing-down character; it may be in the loins, in the back of the neck, in the head, etc. There may be a general feeling of discomfort with soreness of the muscles and joints; there may be nausea and vomiting; and there may even be violent mental agitation. The influence of the nervous system in this condition is profound. Phlegmatic women seldom suffer from any of the foregoing symptoms during menstruation, unless there are serious mechanical obstructions to the outflow of the blood. On the other hand, sensitive and hysterical women are almost always dysmenorrhœacs.

We hide our ignorance of the occult anatomical lesions which exist in these cases, by saying that the phenomena are the result of temperament. The truth probably is, that there is no complaint or disorder from which organized beings suffer, whether in great or small degree, which has not its correspondent molecular derangement somewhere, though it may be beyond the power of demonstration by mind and microscope. The mechanical causes of dysmenorrhœa are far more common than the chemical—in fact, it is difficult to conceive of dysmenorrhœa in which the mechanical element plays no part.

In the weak and flabby uteri of young women with poor nutrition and over-stimulated brains we find dysmenorrhœa associated with deficient arterial tension. There is insufficient force to expel the blood through the distended veins and capillaries, or the uterus with its weak and imperfectly nourished muscle contracts too feebly upon the exuded blood to force it out of the uterine cavity. Similar difficulties in the vascular apparatus obtain in the heavy and boggy uteri of subinvolution. In anterior and posterior displacements the blood may be confined in the uterine cavity, and the force of contraction be spent at mechanical disadvantage in removing it. In certain forms of intra-uterine tumors similar accumulations and inefficient contractions may also exist and dysmenorrhœa

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with its attendant phenomena result. Obstruction may also be caused by hypertrophied mucous membrane, constituting the so-called membranous dysmenorrhœa.

Again, dysmenorrhœa may arise in connection with various atmospheric conditions, such as have been enumerated in a preceding paragraph. The chemical condition of the blood may also be such as to prevent free transudation from the vessels during menstruation. Theoretically, an excess of the albuminous or fatty constituents with imperfect assimilation, a superabundance of corpuscles with corresponding deficiency of water and high specific gravity, may all act as sufficient causes of dysmenorrhœa. The same may be said of blood in which large quantities of sugar, pigment, parasites, and other foreign matters are circulating. In all such conditions, we should have a circulating fluid with increased specific gravity, and in so far as menstruation is dependent upon osmosis the fluid would transude with more than ordinary difficulty. I admit that this is entirely theoretical and know of no investigations which have been made upon the subject, but it seems to be in accordance with physical laws. Dysmenorrhœa, therefore, is not a single symptom but a complex of symptoms. It is not a disease as that term is ordinarily understood, though it is a morbid condition.

III. Oligomenorrhœa.—The condition in which the monthly flow of blood is too scanty to relieve the pelvic congestion is very frequently associated with dysmenorrhœa, and in such cases presents more or fewer of the symptoms which are common to that condition. The term is relative, for the loss of a few drachms of blood in some individuals is all that seems necessary to restore the normal tension to the pelvic vessels. With such persons there may be no symptoms of dysmenorrhœa, and while they may enjoy a fair degree of health they are more frequently women with phthisis or anæmia, or some other constitutional vice.

Oligomenorrhœa sometimes persists during the pregnant state, recurring at that time in the month when the ordinary menstrual flow was wont to appear. It may occur in connection with deformities or want of development of the uterus or ovaries, or during the latter portion of menstrual life, and in such cases may be unaccompanied with dysmenorrhœa. Oligomenorrhœa with dysmenorrhœa is frequently present in cases which offer decided mechanical obstruction to the menstrual flow, as in cases of exaggerated anteflexion, and less frequently in cases of marked retro-

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flexion. It is frequently present in women who are very fat, whether the latter condition be one which has persisted from childhood, or has occurred, as is frequently the case, as the consequence or result of numerous pregnancies in rapid succession. In the oligomenorrhœa of anæmic women, the blood contains comparatively few corpuscles and is mostly serum. It serves as a fair index of the character of the blood which is circulating in the patient.

IV. POLYMENORRHŒA.—This is also a term which must vary in its significance with the individual. I have seen women who bled profusely for days and weeks, some days losing at least a pint of blood, and yet preserving a ruddy complexion and a fair degree of strength. The losses of blood which are frequently sustained in connection with uterine cancer, polypi, and other neoplasms, before the evidences of the drain upon the resources appear upon the skin, or in the waning powers of endurance, are sometimes almost incredible. Polymenorrhœa is also a very common occurrence as the menopause approaches. At such times it is frequently associated with developing malignant disease, and in certain quarters, both lay and professional, the latter is looked upon as a necessary accompaniment of the menopause, hence it is termed "the critical time." It is critical simply in individual cases, not because it is nature's method to terminate the history of a function with a series of bloody inundations; it is no more critical than any other period of menstrual life, unless there is a foundation of disease which can be favored and encouraged by the changes in tissue vitality which characterize the approach of old age.

Again, every gynecologist sees plenty of weak and anæmic women who give no history of losses of large quantities of blood, and yet the loss of a few ounces with each recurring period brings them to the verge of collapse. Such cases require active treatment quite as much as those in which the quantity lost is far greater. The blood-making powers of the latter are far more active than those of the former. It may generally be assumed that a menstrual period which continues longer than a week, has abnormal conditions associated with it, and should be stopped. This is especially true if the flow has been profuse, and though the patient may for a time see nothing in her condition to disturb her, with the exception of the annoyance which attends frequent and protracted bleedings, her vitality will eventually be sapped by the continuance of such a condition, and hence the sooner its cause is discovered and remedied, the

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better. Those who bleed for long periods of time, at regular menstrual intervals, will sooner or later be bleeding at irregular intervals unless relieved, and it is the part of wisdom and conservatism to investigate in all cases, as soon as possible, after the polymenorrhœa has been established.

One of the most common causes of this condition is carcinoma. For a long time the bleeding may not be due to sloughing and rupture of vessels connected immediately with the disease, but to the increased uterine congestion which attends its development. Other malignant diseases of the uterus produce excessive bleeding in the same manner as carcinoma—that is, by increasing to a very great degree the volume of blood which is directed to the organ; but they are far less common than carcinoma. Benign growths occupying the interior of the uterus, or imbedded in its muscular structure, are almost always a cause of polymenorrhœa, especially if near the trunk or main branches of the uterine artery, and it is perfectly intelligible that this should be the case.

Various diseases of the lining mucous membrane of the uterus, apart from the malignant diseases, are prolific sources of polymenorrhœa. Modern surgical gynecology has done much to relieve such conditions which were once as fatal as cancer, and with the imperfect methods of examination formerly in vogue were probably diagnosticated as cancer.

There are also certain occupations which seem to favor excessive bleeding at the menstrual period, and we may be unable to find any evidence of disease in the uterus or its surroundings in those who are thus suffering. Occupations in which the individual is constantly exposed to a very high temperature have this tendency, and I have seen a number of cases among cooks and laundresses. Among prostitutes and others who have greatly abused the sexual act, polymenorrhœa is also of frequent occurrence.

When we think of the great progress which has been made in recent years in the diagnosis of so many conditions which have excessive uterine hemorrhage as the chief symptom, and the means which have been devised for their effectual relief, there is cause for profound gratitude.

V. ATOPOMENORRHŒA.—This term includes every variety of monthly flow, or substitute for the monthly flow by any other channel than the one which nature designed for that purpose. The term *vicarious* menstruation is a very awkward one, and properly

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means the menstruation which one person suffers or experiences for another. This is, of course, an absurdity, and only by twisting the term from its proper significance can it be understood as referring to menstruation which occurs through abnormal channels. The term xenomenia, which was proposed by Flamant, in 1720, is a good one, and is etymologically correct, but for the purpose of uniformity perhaps the more clumsy term which I have suggested would be preferable.

A common form of atopomenorrhœa is the bleeding from the nose which occurs with young girls during the first few months of puberty. It usually requires no treatment, and may be considered as a means of relief to a congestion which is displaced. Bleeding from the anus, especially in those who suffer from hemorrhoids, is another form of this condition, which is perfectly intelligible, and may usually be relieved by the destruction of the enlarged veins. Other abnormal bleedings which may occur with the normal menstrual flow or in the absence of it, are bleedings from the lungs or stomach; bleedings into or through the skin or mucous membrane in the form of purpura and various extravasations and transudations; bleeding in connection with acne, nævi, ulcers, and fistula; bleedings from the gums, the nipple, the anterior chamber of the eye, the external auditory meatus, and other places.

The foregoing facts seem to prove that the monthly congestion in women, whatever be its cause, is not local, but general; or, at any rate, that the vascular tension at such times is raised, so that veins and capillaries which are near the surface are much more liable to rupture than under the ordinary conditions of tension and pressure.

DISCUSSION.

Dr. A. Jacobi, of New York: In some instances Dr. Currier has told us what he would do for the conditions described. Now, all of us being practical men, we would like to know any suggestions he may have to make, general or special, in the treatment of vicarious menstruation.

Dr. Currier: The paper had no bearing on therapeutics. But with regard to this particular subject to which Dr. Jacobi has referred, it has seemed to me to be extremely important. There are points connected with it which I think are practical, and may be worth while mentioning on this occasion. To illustrate, last Saturday I saw a girl,

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seventeen years of age, but with all the outward appearance of childhood, who had never menstruated, and was suffering from nose-bleed. The external genitals were those of a woman; the uterus, that of a child. In cases similar to this, I have found that electricity is of great value, because it stimulates the organs whose development has been retarded, and by inducing pelvic congestion removes congestion from abnormal channels. Menstruation is a normal function. The channel which it should take is by the genital passages. If there are faults of anatomy, faults in development or in the form of neoplasms, then we find not infrequently that nature relieves herself by congestions in abnormal channels. By diverting the congestion to the normal channel, I think that in many cases the abnormal congestion will pass away and menstruation will take place. The fault is one of general nutrition or of special nutrition of the genital organs, and by relieving this through electricity, or other means applied to the vascular system of the pelvis, in many cases, we restore not only the menstrual flow, but in married women pregnancy often follows.

Dr. JACOBI: I beg pardon, Mr. President, for taking the floor so often, but I usually try to be quite brief. In this connection, I would say that I have seen my share of the cases of abnormal menstruation now under consideration; a small share, possibly. But it struck me that in the majority of cases the fault is not in the pelvis. Not being a specialist, I have also looked to other parts for the explanation of vicarious menstruation. Where persons have varicosities, it is quite possible for slight impediments to general circulation to result in bleeding from those varicosities. Where there are polypi, or chronic catarrh, or hyperæmia of the nose, it is quite natural there should be bleeding from that organ when congestion exists. Such children who are confined to school, sitting five hours a day, will suffer from hemorrhage at the nose. Where in girls the uterus is behind in development, it is possible there should be bleeding from other parts, particularly from the nose, due to impeded circulation. The impediment to the circulation is often due to heart disease, or, at all events, to a weak and undeveloped heart. Therefore, in most cases of nose-bleed in children from twelve to fourteen years of age, the prolonged use of iron and the administration of digitalis is of benefit. Stimulation and nourishment of the heart muscle will cure nose-bleed in a short time. Thus I have seen many patients relieved of this affection and restored to normal menstrual function by general strengthening treatment, but never without some cardiac stimulant. Give such a person strophanthus, digitalis, or what cardiac stimulant you may choose, and she will amend immediately; but do not forget general hygienic management.

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Thus I look to the condition of the heart and of the general circulation before attending to anything else.

Dr. CURRIER: In one of the divisions which I made of the general principles usually admitted to underlie these disorders, I spoke of weakness of the heart and of faults in the vasomotor system.

XIV. RULES FOR THE MANAGEMENT OF CARDIAC DILATATION, BASED ON ITS ETIOLOGY.

BY ALFRED L. LOOMIS, M.D., LL.D.,
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IF we examine the writings on cardiac disease of twenty years ago, we are struck by the prominence given to cardiac murmurs. The teaching at that time was, that as soon as a murmur was detected in any given case, every effort should be made to locate it accurately, and a patient with a persistent loud valvular murmur was regarded as doomed to a life of anxious misery. Murmurs were the important clinical phenomena of cardiac disease, and decided their diagnosis, prognosis, and treatment. But as our knowledge of heart disease advanced, murmurs assumed a secondary place, and the morbid changes in the valves which produced them became the important subject for investigation. Within the last few years we have gone a step further, and to-day no intelligent observer regards a murmur as anything more than a sound indicating the seat and character of a valvular lesion—the great problem to be solved in every case is, What is the condition of the heart muscle and of the heart cavities? So long as full nutrition is maintained in the cardiac walls, the heart meets every obstacle to its activity with added force; and only when its walls are weakened, do we find that all of nature's pathological efforts have been put forth only to end in that evidence of exhausted vitality, cardiac insufficiency. If enlargement of the heart is purely muscular and compensatory, it cannot be, strictly speaking, regarded as pathological, for it is nature's conservative process, which doubtless we would not arrest if we could, save by the removal of the condition for which it compensates. To maintain such hypertrophy, there are certain well-recognized conditions which are absolutely necessary:

First. The muscular tissue of the heart must be healthy.

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Second. The heart muscle must receive a sufficient supply of healthy arterial blood.

Third. The products of muscular waste must be rapidly removed from the body.

Fourth. The trophic nerve apparatus of the heart must be in a normal state.

Any essential deviation from these normal conditions leads to weakening of the heart walls, and favors the dilatation of its cavities.

It is self-evident that for the production of cardiac dilatation there must be either abnormal blood-pressure in its cavities during its diastole—such as obtains in valvular insufficiency, or there must be diminished resistance in the heart walls to the normal blood-pressure.

In studying the etiology of cardiac dilatation we, therefore, naturally divide its causes into two general classes—*primary* and *secondary*. The *primary causes* are :

First. Impaired general nutrition with extreme anæmia, in those who are subjected to excessive physical labor.

Second. Degenerative changes in the heart muscle, as fatty, fibroid, and granular.

Third. Cardiac enervation, from the immoderate and habitual use of tobacco, alcohol, and narcotics; excessive venery and certain neurotic conditions are included under this head.

The *secondary causes* are :

First. Stenosis and insufficiency at the aortic and mitral orifices.

Second. Obstruction to the pulmonary circulation.

Third. Extensive atheromatous changes in the aorta and coronary arteries.

Fourth. General arterial sclerosis and renal disease.

It is not my purpose at this time to describe the pathological changes or the clinical phenomena which attend the development of dilatation of the heart cavities from these different causes, but to propose rules for their management, based on their etiology. It should, however, be borne in mind, as Dr. Stokes long since stated, that "general dilatation of the heart is always of constitutioual origin;" in one case fatty degeneration may be its primary and only cause; in another, fatty degeneration may be secondary to the hypertrophy of a valvular lesion; and it should always be remembered that heart diseases cannot be divorced from other

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diseased conditions with which they are often intimately connected and of which they form a part. It is always important, from a therapeutic standpoint, to determine whether the dilatation is or is not secondary to hypertrophy, for the chance of affording temporary or permanent relief is greatly diminished when hypertrophy precedes the dilatation.

The most promising variety of cardiac dilatation is that which depends upon general impaired nutrition, associated with a condition of extreme anæmia—it is in this variety that we may hope for speedy and permanent relief.

The heart muscle, which has become weakened by long-continued faulty nutrition, may suddenly or slowly yield to the excessive intra-ventricular blood-pressure which occurs during continuous and prolonged physical labor. The most common examples of this variety are met with in poor working-women of feeble physique, whose diet has been largely, or exclusively, of bread and tea. The distressing cardiac symptoms which attend the dilatation associated with a condition of nervous exhaustion, make them not only miserable sufferers, but very difficult patients to manage. It is of the utmost importance that these patients shall have healthful surroundings, where they may spend at least eight hours of the day in the open air. Their diet must be nutritious and non-stimulating, including a large proportion of animal food; moderate and systematic exercise must be taken daily, but never carried to fatigue. The only remedial agent which has seemed to me of service in these cases is arsenic. It should be given in $\frac{1}{60}$ grain doses, three or four times a day, after taking food. If this plan is rigidly enforced the heart will rapidly regain its muscular power, the signs of cardiac dilatation will quickly disappear, and the œdema of the lower extremities, which is so constantly present, as well as the accompanying turgid condition of the venous system, will subside in a most satisfactory way.

In that form of dilatation which results from softening of the cardiac muscle, so often present during convalescence from typhoid fever and other acute infectious diseases, patients should be kept in bed, and not allowed under any circumstances to assume the upright position for at least three or four weeks. They should receive the largest amount of liquid nourishment, with a free allowance of wine; everything that shall tend to excite the circulation must be

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carefully avoided, as well as those influences which dispose to heart enfeeblement.

The remedial agent from which I have obtained the greatest benefit in their management is a combination of the sulphate of quinine and strychnia—2 grains of quinine and $\frac{1}{60}$ of a grain of strychnia, three times a day, so long as there is any irregularity in the rhythm or force of the heart; this plan of treatment should be rigidly enforced. Dilatation of the heart due to fatty degeneration is usually attended by more or less severe attacks of anginal pain and paroxysmal dyspnœa, which are rarely present in other forms. I have frequently observed that the anginal paroxysms, with the temporary irregularities in the heart action which attend them, are associated with derangements of the stomach, as manifested by flatulence and acid eructations. I have, therefore, adopted as an important principle of treatment, which should always be kept in view in their management—that before having recourse to any remedies intended to act directly on the heart, we must be assured that the digestive organs, especially the liver and stomach, are placed as far as possible in a healthy condition, and that they are performing their functions freely and regularly. Small doses of calomel combined with rhubarb and soda, a spare diet, and absolute rest, will often do more to equalize the circulation, and relieve the distressing symptoms, than any tonic measures directed to the heart itself. All causes of nervous exhaustion must be avoided by promoting, as far as possible, a tranquil, happy, and healthful state of mind—whether the dilatation is slight or extreme, the highest degree of general health must be maintained. The diet must be digestible and nutritious and taken only in small quantities at one time, with the minimum quantity of fluid—a heavy meal at night may be a cause of sudden death in one who has a dilated fatty heart. It is important that these patients shall have the largest amount of fresh air at night, as well as during the day. Gentle exercise may be taken when it does not produce dyspnœa or fatigue, but when a fatty heart is excessively dilated, even the most gentle exercise should not be indulged in. The most useful drugs in this form of cardiac dilatation are arsenic, iron, and strychnia. The iron and arsenic may be administered alternately, never in combination. Strychnia should only be given in the morning before rising. Digitalis is never admissible, for it throws increased strain upon the heart, and thus acts injuriously upon its weakened walls.

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In emergencies, when the dyspnœa is urgent and the heart's action irregular and intermitting, a full hypodermic of morphine may tide the patient over a dangerous period, and for a time, at least, overcome the heart insufficiency.

The general management of dilatation due to fibroid degeneration of the heart walls is similar to that of dilatation from fatty changes, except that instead of iron, arsenic, and strychnia, the bichloride of mercury should be administered in $\frac{1}{60}$ grain doses, three times a day, for a long period. All the so-called heart tonics are to be avoided, but a free action of the kidneys and bowels should be early established and constantly maintained.

The most marked examples of dilatation dependent upon cardiac enervation, are met with in the morbid state, generally known as "Graves's disease." These cases are to be conducted with especial reference to the general condition of the patient; in the majority of instances a condition of anæmia exists which indicates the use of iron and other general tonics. Thirty to sixty drops of the fluid extract of ergot three times a day, combined with daily applications of the galvanic or faradic current to the vagus, will often be followed by the most marked and permanent relief. In a number of instances I have entirely overcome the dilatation, and relieved the patient from all signs of cardiac irregularity by following this plan continuously for five or six months.

Dilatation resulting from the excessive use of tobacco or narcotics, attended by an intermittent and irregular pulse, a tendency to syncope, and great nervous irritability, is generally relieved, if not cured, by a gradual withdrawal of the cause, and the administration of full doses of strychnia, with the daily use of cold shower baths on retiring at night and on rising in the morning. The cardiac weakness and dilatation which occasionally result from excessive venery, characterized by nervous excitability and palpitation, in which a systolic murmur is often heard, without evidence of valvular disease, is easily managed, if the excesses can be stopped, by the administration of 30 grains of bromide of potassium, three or four times a day, for several weeks.

Secondary cardiac dilatation is far more common and serious than primary, for, in the majority of instances, it is associated with degeneration of hypertrophied heart walls. So long as the hypertrophied heart muscle is able to compensate for the valvular insufficiency, or the arterial changes which have led to the dilatation,

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the patient still being able to exercise without inconvenience, there being no dropsy, or pulmonary disturbance, the only required treatment is to keep the heart muscle in a healthy condition by regulating the patient's life, diet, and habits. But when the compensation is incomplete, and there is commencing failure in the contractile power of the heart muscle—the dilated and faltering heart calls for support—then for a time the daily use of small doses of digitalis will supply the demand, and enable the heart to meet its extra labor with added force. But later, when the venous system becomes engorged—the feet œdematous, the pulse rapid, feeble, and irregular, when there is a constant sense of oppression in the præcordia, with paroxysmal attacks of dyspnœa, then larger doses of digitalis will be required to bring to the heart a contractile force which will relieve the over-distended venous system.

In this connection, I will briefly state the rules which have been formulated by my experience, and which seem to me safe to follow not only in the use of digitalis, but of all those drugs which act in a similar way to digitalis. I would state, as a general rule, that the use of digitalis is indicated when there is commencing or advanced loss of compensation. If the failure of compensation is extreme and accompanied by dilatation, more or less stasis occurs in the venous circulation, as is evidenced by difficult breathing, an accelerated, feeble, irregular, and intermitting pulse, œdema of the feet, and diminished secretion of urine. The first marked effect of heart failure from any cause is diminished arterial pressure—the essential therapeutic action of digitalis is to raise arterial pressure; the slowing of the pulse which follows its administration is the result of such increased pressure.

Experimental physiology has shown that by increasing arterial pressure the urinary secretion is increased. If in one who has commencing or advanced heart failure from dilatation, the urinary secretion is increased by the administration of digitalis; it is safe to continue its use so long as the amount of urine equals or exceeds the normal. But if during its administration the quantity of urine diminishes, it should at once be stopped. Such decrease is a warning which should never be neglected, for if its use is continued after it has occurred, the ventricular contractions will become more and more feeble, until, finally, we have a toneless heart sound, or perhaps a complete stoppage of the heart. It should also be borne in mind that in those exceptional cases of cardiac dilatation in which

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high arterial tension exists, the urine will not be increased by digitalis, and its use is contra-indicated.

The quantity of digitalis which may be administered in any given case will vary with the susceptibility to its action and the effect produced. If five or ten drops of the tincture, three times a day, entirely relieve the symptoms of an over-distended ventricle, no larger doses should be given. The best effects of the drug are always obtained when the patient is at rest; therefore, the largest dose should be given at night on retiring. If large doses are required to overcome the dilatation, the patient should always be kept in bed during its administration. I am quite certain that often much harm is done by allowing patients to go about who are taking large doses of digitalis. The maximum dose which it is safe for any patient to take for any length of time, is sixty minims of the tincture, or half an ounce of the infusion, and such doses should never be given unless the patient is under the close observation of the physician. The remedial agents which belong to the digitalis group, and which possess in common with it the power of slowing of the heart and increasing the blood-pressure, are convallaria, strophanthus, Canadian hemp, adonidine, sparteine, and squills. The only one of these which has seemed to me to increase the power of digitalis when combined with it, is squills. These two drugs have long been used in combination with calomel in the famous "Hope" or "Fothergill pill," the formula of which was first given to the profession by Dr. Hope for the treatment of cardiac dropsy. I know of no combination which is so effective in relieving the venous congestion which leads to the pulmonary hepatic and gastro-intestinal complications of secondary cardiac dilatation. In urgent cases they may be given every four hours until the venous engorgement is relieved, or until the specific effect of the calomel is reached. Then they may be administered at night for an indefinite period. I have cardiac patients who have taken one of these pills at night for months, with the most marked beneficial effect and without exhibiting any of the constitutional effects of the calomel.

Strophanthus and convallaria, while they are more prompt in their action than digitalis, are far less reliable; they may increase the heart power and raise somewhat the blood-pressure, but their effect is not permanent, and they have little or no diuretic action. They have disappointed me so often that I now rarely use them, except in those cases in which digitalis causes so much derangement

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of the digestive organs that I am compelled to stop it, and then, I administer them alternately. Adonidine, which has recently been claimed as a substitute for digitalis, will for a time relieve many of the distressing symptoms of cardiac dilatation; such as vertigo, headache, dyspnœa, and precordial pain, but it does not increase the general blood-pressure and has no diuretic action. It seems to me to act only as a sedative, and is similar in its effect on the heart to belladonna. It in no way supersedes or supplants digitalis. From the few experiments which I have made with it, I am led to the opinion that its administration cannot safely be continued very long, even in one-eighth of a grain doses, on account of its depressant effects.

The citrate of caffeine, although it raises the blood-pressure, cannot, strictly speaking, be included in the digitalis list, for its action is directly on the vaso-motor centres.

Secondary cardiac dilatation, due to obstructed pulmonary circulation either from emphysema or mitral insufficiency, always has its primary seat in the right heart, and is preceded by a moderate degree of hypertrophy of the right ventricular wall. If it reaches such a degree that it causes constant obstruction to the systemic venous return, all the distressing phenomena which attend general cardiac dilatation will be developed; and its management is not essentially different from that proposed in dilatation from valvular incompetency. In case where either from emotional excitement or sudden physical strain, a dilated right heart becomes so engorged that death seems imminent, prompt relief may often be obtained by the application of leeches over the sternum, or wet cups over the base of the lungs. If the general venous engorgement reaches such a degree as to cause cyanosis, extreme dyspnœa, and an irregular intermitting pulse, ten or twelve ounces of blood taken from the arm may temporarily avert a fatal issue.

The atheromatous changes in the aorta and coronary arteries which lead to the development of degeneration of the heart walls, and to secondary dilatation of the heart cavities, is most frequently met with in lithæmic subjects. The primary effect of the lithæmic condition is left ventricular hypertrophy. This, associated with the blood changes of the lithæmic condition, subjects the walls of the aorta to abnormal tension, which leads more or less directly to atheromatous changes in the arterial walls. As a consequence of the diminished elasticity of the aorta from these changes, the force of

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the coronary circulation is so enfeebled that the nutrition of the heart walls is impaired, and fatty or granular degeneration of the heart muscle necessarily follows. Sooner or later the heart cavities become dilated, on account of their diminished resisting power to the normal intra-ventricular blood-pressure.

It is possible in the early stage of lithæmia cardiac hypertrophy, before any changes have occurred in the aorta, for the coronary arteries to become atheromatous from the abnormal tension to which they are subjected by the excessive recoil of the aorta; which recoil is always proportionate to the force of the ventricular contraction.

It is evident that the period in which we may hope for success im the management of this variety of cardiac dilatation, is during the development of the hypertrophy which precedes the dilatation.

The diet, hygiene, and exercise which antagonize the lithæmic condition must be early and persistently maintained, and those remedial agents employed which increase elimination and diminish arterial tension. The most reliable remedial agent for accomplishing this, is the iodide of potassium; its administration should be continued in small doses for a long period. When the dilatation has reached an advanced stage, I have sometimes obtained temporary relief from the paroxysmal anginal pains and cardiac dyspnœa, which are often so distressing, by nitrite of amyl or nitro-glycerine.

Dilatation of the heart which is secondary to arterial sclerosis and renal disease, is always preceded by left ventricular hypertrophy and evidences of high arterial tension; but when the period is reached at which the renal symptoms clearly establish interference with the functionary anatomical elements of the kidney, a feeble heart action and diminished arterial tension will indicate degenerative changes in the heart walls and dilatation of the heart cavities. Whenever the period of tension is once passed, we can never hope to reëstablish it fully, except temporarily by the action of certain drugs.

These cases must be managed on an entirely different basis from any other variety of dilatation. The first and most important thing to be accomplished is to improve the condition of the blood, by removing as rapidly as possible the products of nitrogenized waste. This can best be accomplished by restricting the patient to a vegetable and milk diet, and by the free administration of citrate of potash and lithia combined with vegetable diuretics, such as col-

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chicum, buchu, and juniper, all of which increase the blood flow through the nutrient vessels, and favor the elimination of the solid elements of the urine. Free action of the bowels should be maintained by saline cathartics, of which Epsom salts is to be preferred; moderate exercise should be taken in the open air to aid in oxidizing the waste products. If the failing heart is not relieved by these depurative means, full doses of digitalis may for a time increase the force of the ventricular contractions, but its action under such circumstances is always uncertain and unsatisfactory; for when once dilatation has developed in a heart that has been hypertrophied from arterial sclerosis and renal disease, the degenerative changes which have taken place in the cardiac muscular fibres will render it impossible for digitalis, or any other cardiac tonic, to produce anything more than a temporary or irregular ventricular contraction. The usual course of such cases is rapidly downward to a fatal issue.

DISCUSSION.

DR. A. JACOBI, of New York: There is a class of dilatations which I believe Dr. Loomis has not touched upon. Suppose the case of a newly born baby whose larger arteries are small. Most of the blood passes for a number of days after birth through the pulmonary artery, which distributes a part to the lungs and a part (through the ductus arteriosus) to the general circulation. At that time the aorta, where it emerges from the heart, is narrow, and if for some reason, as by contraction of its orifice, the pulmonary artery should not supply the lungs and whole body with a sufficient amount of blood, the result would be that the heart would have more than its usual work to do, and would become hypertrophied and dilated. Such a condition of things is found in early infancy and childhood, but there it is rarely met with; what is more common, however, is a similar condition of the arteries in general throughout the whole life. The arteries may be very small throughout the body. The result is that the heart, which is of normal structure and size, has an undue amount of labor and becomes dilated after a while, and then may become hypertrophied. This condition is not at all uncommon. When the heart is normal originally and the arteries very small, the result is insufficient supply of blood to the body, general anæmia, and, lastly, chlorosis—that form which is absolutely or relatively incurable. Sometimes the chlorosis passes into a form of pernicious essential anæmia. It is not uncommon, on making post-mortem examinations in cases of perpetual chlorosis or pernicious anæmia, to find the arteries small throughout the body, and cardiac

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dilatation. I have not alluded to this form of dilatation of the heart because I know how to cure it, but in order to complete the list of etiological factors given by Dr. Loomis.

With regard to the use of digitalis, I wish to make a single remark. Many physicians look upon digitalis as simply a heart stimulant. It is something more than that. The heart is nourished by bloodvessels just as is the case with any other structure. That sounds like a very trivial and superfluous remark, still we frequently act as if we did not know it. We do not only stimulate the heart by cardiac stimulants; we nourish it. An increased supply of blood is sent to the small bloodvessels as well as the large ones, and to the heart muscle itself, and thus while giving a heart stimulant, we at the same time supply the heart with increased circulation. Therefore it is that there are many conditions of general debility, always combined with debility of the heart muscle itself, in which small doses of digitalis, two or three times a day, continued one, three, or twelve months, have most beneficial effects.

There is one cardiac tonic which, I believe, was not alluded to by the author: that is spartein, the alkaloid of the old American remedy, scoparius. It is certainly a good cardiac stimulant, and sometimes has advantages over digitalis. The latter remedy being absorbed slowly and eliminated slowly, gives rise now and then to what is known as cumulative effects. This is not so with spartein. Thus, if it is desired to obtain the stimulating effects very soon, while you have to wait for the effect of digitalis, it would be as well to give a few doses of spartein at once. This remedy is absorbed very rapidly and is also eliminated rapidly, and cumulative effects need not be feared.

Dr. E. V. STODDARD, of Rochester: The question of the condition of the heart muscle in relation to therapeutics, which Dr. Loomis has so clearly set before us, is a very important one. In the first place, we have to consider whether the heart muscle is below its normal condition of power, and if so, whether its systole or contractile power is sufficient to carry on the circulation throughout the body in its various departments. If this be the condition, then our therapeutic line is a very straight and limited one, and is confined to hygienic measures. If, however, the change has passed this stage, but has not reached the condition of entire degeneration of the muscular structure, but simply that point where, without some aid, the heart cannot carry on its work, we have come to the second department of therapeutics to be joined with the first. If I remember correctly, Huchard and Fernet make four periods in the cycle of degeneration of the heart muscle resulting in dilatation. The first is that condition in which the heart is still able to do its duty, although somewhat reduced in systolic power. The second,

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is that of "hypersystole," or where nature is trying to compensate for the weakening of the heart muscle by hypertrophy. The third is the condition in which, in spite of the efforts of nature to keep up the heart's strength by hypertrophy, the organ still fails to do its work properly and must go on rapidly diminishing in power; and the fourth, "asystole," or the condition in which its muscular tissue is in a condition of fatty degeneration and its power is almost *nil*. In the first two conditions, the treatment is one of hygiene. In the third and fourth, or hypersystolic and asystolic conditions, we have to resort to cardiac tonics, which, though of much service in the third, are of little aid in the fourth. The author of the paper has very lucidly set forth the fact that in the fourth condition very little can be done, except to try to prolong life and make it as comfortable as possible, and that in fatty degeneration very little is to be gained from so-called cardiac tonics.

As to cardiac remedies, digitalis is used very largely in an experimental way. When the practitioner finds a murmur and irregularity in the heart's action, intermittent or otherwise, with or without increased frequency of pulse and feebleness of contraction, his tendency is to try digitalis without further question, without any reference to the condition of arterial tension existing. The arterial tension is a very important matter, for it should be remembered that in cardiac stimulation there is not only the vaso-motor influence which acts upon the general vascular system, but also that which is connected with, and acts upon, the heart itself. We are apt to lose sight of the fact that the intracardiac ganglia have a very powerful influence in regulating the rhythm and power of the heart contraction. Digitalis does something more than influence arterial tension by vaso-motor influence. It produces a prolonged and more powerful systolic contraction, and in this way not only reinforces the heart, but lengthens its period of rest. If this latter is the only result of the administration of digitalis, the effect is beneficial; but if, as often occurs, arterial tension also is increased, the labor of the heart is not lessened, but the existing evil is increased.

It seems almost superfluous for me, after the remarks of Dr. Loomis and Dr. Jacobi, to dwell at length upon special therapeutic indications, but I wish to make one suggestion with regard to one remedy mentioned by Dr. Loomis—that is, convallaria. There are conditions in which the cumulative effects of digitalis are quite apparent, and arise generally, it seems to me, not so much from hyper-sensitiveness of the patient to its action, as from the condition which Dr. Loomis has referred to as retarded elimination. Dr. Loomis explained the rise of arterial tension and interference with the secretion of the kidneys by the influence of the active principles of digitalis, digitalin particularly, which mainly passes out through the kidneys, but the function of these

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organs being in abeyance, retarded elimination ensues and cumulation takes place. Convallaria has not this objection, and it has been customary with me when digitalis has shown it, to discontinue its use a few days and employ convallaria. Further, when digitalis fails to produce increased action of the kidneys, Gubler suggests, as a substitute for digitalis in these cases, a remedy, of which he thought so highly that he calls it the ideal diuretic—that is, caffein. The failure in the employment of caffein has been from the employment of too small doses—from 50 centigrammes to 1 gramme daily must be given. The suggestion of Dr. Jacobi to combine spartein with digitalis is a good one; in the condition under discussion, spartein alone or digitalis alone not giving as good a result as when in combination with each other.

Dr. A. L. Loomis: With regard to chlorosis being a condition in which cardiac dilatation may occur, I fully appreciate Dr. Jacobi's remarks, and while I did not speak of it directly in my paper, I thought it would come under some of the headings. Perhaps I should have made a little more definite statement with regard to it. I am quite certain that there is such a form of dilatation, and when it exists it is one of the most unfavorable elements in prognosis. With regard to spartein as a remedy, it will be noticed that my paper is based on my own experience, and that I have mentioned only such remedies as I have used sufficiently to speak with some authority on their influence. I have used spartein very little, and, therefore, did not mention it, but I shall take the opportunity of testing it hereafter.

It has been my observation that the general tendency of the profession is to give digitalis in cardiac disease, hit or miss, and I am quite sure that a great deal of harm is being done by its indiscriminate administration. I think it is a safe rule never to give this drug when there is arterial tension, no matter whether there are arterial changes or not. Take the condition of œdema of the feet, which is often temporarily present after a man has been on a spree, or has drunk excessively of wine—in such a case digitalis is not indicated, while resort should be had to calomel. Our forefathers long ago learned that full doses of calomel, rhubarb, and soda would relieve the heart, where, if digitalis were given, there might be some serious result. That is one fact, the abuse of digitalis, to which I wished to direct attention in writing this paper. Another is that where simple dilatation exists from weakness of the heart, we are to depend upon hygienic means, as Dr. Stoddard has indicated, rather than upon any direct cardiac tonic. In speaking of a cardiac tonic, I do not mean simply a drug which has its specific and only action upon the heart; but one which increases the power of the heart muscle and increases the tension of the arteries in connection with it.

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XV. A Clinical Study on Alopecia Areata and its Treatment.

By L. DUNCAN BULKLEY, A.M., M.D.,
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Although not a dangerous affection, and one ordinarily thought of mainly in connection with cosmetic effect, alopecia areata may, and often does, cause an amount of annoyance and distress which is as hard to be borne as actual pain. While in some instances it may be but a transient affair, and may consist of but one or more small, perfectly bald spots, which are readily concealed by hair of ordinary length, in other instances it may prove most intractable, lasting years, involving large and conspicuous areas, and even removing every hair from the body, including eyebrows and eyelashes; in its fullest development it causes a very considerable disfigurement, and even in moderately severe cases the baldness is so striking that it becomes a veritable cross to the sufferer, from the attention it attracts and from the uncertainty as to the nature and cause of the affection.

I shall not attempt at all to enter into a discussion of the nature or causation of alopecia areata, which was ably presented by Robinson in his article before the Ninth International Congress in 1887. Much has been written in advocacy of its neurotic origin on the one hand, and of its parasitic nature on the other. Further discussion of the matter here would be foreign to the purpose of the paper, which is simply to present personal clinical experience in the disease, with an analysis of the cases which have been under my observation and care.

Alopecia areata is presented for treatment much less frequently than I had supposed, previous to making my inquiries into the statistics of cases of skin disease which have been under my care. In my first analysis of 1000 cases of skin disease,[1] I find but 4 instances of alopecia, and of these only 1 was recorded as alopecia areata, 1 of alopecia partialis, and the other 2 had no special designation. In my next series of cases analyzed[2] not a single instance

[1] American Practitioner, May, 1875.

[2] Ibid., April and May, 1876.

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of the complaint was recorded among 617 cases of skin disease; and in my third analysis only 1 patient[1] with alopecia areata was seen among 774 cases of skin disease. In a subsequent study and report on 8000 cases of skin disease[2] in private and public practice, there were 46 cases of alopecia areata; of these, 32 occurred among 2583 cases in private practice, 1.24 per cent., and but 14 cases were seen in public practice among 5417 cases, or only 0.25 per cent. of all skin cases. On examining carefully later records I now find data relative to 119 cases of alopecia areata, occurring among 12,725 cases of skin disease, seen in private practice, at the New York Hospital, and at the Skin and Cancer Hospital. I have excluded all of the earlier records of skin cases seen in other institutions, because the original data are not accessible at present.

The proportion of cases of alopecia areata to the whole number of patients is here seen to be 0.94, or not quite 1 per cent. But when we come to examine the records of cases seen in private practice as compared with those seen in public institutions, the difference will be found very striking. Thus, among these 119 cases, only 32 were observed in public practice among 7086 cases, it forming there but 0.45 per cent., whereas in private practice there were 87 instances among 5639 cases of general skin disease, or something over 1.54 per cent. The reason for the larger percentage of cases occurring among the public cases now analyzed than among those previously referred to, is found partly in the fact that in the hospitals last mentioned the grade of patients is higher than in many other public institutions, approaching more nearly to the class treated in private practice.

It will be seen that in these statistics the proportion of cases of alopecia areata was more than three times greater in private than in public practice, namely, 1.54 per cent. to 0.45 per cent. This difference in relative frequency cannot be wholly attributed to the greater attention which would be paid to the complaint among the former class of patients, for the appearances presented by the bald, smooth, white patches are so striking that they cannot escape attention, and my experience has been that the plainer classes are often quite as solicitous about the disease, when present, as are the rich. I believe alopecia areata to be relatively much less frequent among

[1] New York Medical Journal, April and June, 1877.

[2] Archives of Dermatology, vol. viii. No. 4, 1882.

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the poor than among the rich, which is, in a certain measure, an argument against its supposed parasitic origin, and in favor of its neurotic nature.

In the large statistics gathered by the members of the American Dermatological Association, almost entirely or very largely from public practice, the disease forms only about 0.64 per cent., corresponding more to that observed by me in public practice. It seems, however, to be somewhat more frequent in other countries, as McCall Anderson gives nearly two per cent. among his cases, and Crocker says that his statistics yield about the same proportion of cases.

Referring now to the 119 personal cases, already mentioned, we will find many points of considerable interest in them, as the histories of almost all of them have been preserved. The following table presents the ages of the patients when applying for treatment:

TABLE I.—AGES OF ONE HUNDRED AND NINETEEN PATIENTS WITH ALOPECIA AREATA.

AGE.	MALES.			FEMALES.			Grand total.
	Private practice.	Public practice.	Total.	Private practice.	Public practice.	Total.	
5 years and under	...	1	1	1	...	1	2
5 to 10 years	1	...	1	4	3	7	8
10 to 15 "	6	...	6	5	1	6	12
15 to 20 "	3	1	4	3	4	7	11
20 to 25 "	7	7	14	4	1	5	19
25 to 30 "	12	5	17	1	1	2	19
30 to 35 "	10	2	12	3	2	5	17
35 to 40 "	12	1	13	4	1	5	18
40 to 45 "	2	2	4	2	...	2	6
45 to 50 "	1	...	1	...	...	...	1
50 to 55 "	3	...	3	1	...	1	4
55 to 60 "	...	...	...	...	...	...	...
60 to 65 "	1	...	1	...	...	...	1
Unknown	1	...	1	...	...	...	1
Total	59	19	78	28	13	41	119

It will be noted here that the number of the males is almost double that of the females, seventy-eight to forty-one.

The ages of the patients will be found to vary greatly, from early childhood to over sixty years of age, but the disease is found to be relatively rare in either extreme of life. The youngest patient was a little girl of four and a half years, now under treatment, who had had the disease since a few months of age. The oldest patient was

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a gentleman of sixty-one, who had been affected several times; the first attack occurred thirty-nine years previously, the second twenty years previously, and the third attack began six months before his visit.

Taking the years in decades, it will be found that there were comparatively few cases during the first ten years of life, but ten patients in all; this number is relatively small, considering the large number of individuals living at that age. It is a little curious also that of these ten cases, eight were in females, whereas in the total statistics the males were so largely in excess; in the next decade the females were again in excess, by three. I think that the reason for the larger proportion of females during these earlier periods of life can only be explained by the greater delicacy of their nervous organism at this time, taken in connection with the nervous theory of the disease in question.

The third decade, that between twenty and thirty years of age, presents by far the largest share of all the cases of alopecia areata, namely thirty-eight, or almost one-third of the entire number analyzed. And here is seen another striking fact in regard to sex, namely, that during this decade the proportion between the sexes is exactly reversed from that which was observed in the first decade of life; namely, that the males are in very great excess, instead of the females. Thus, we find here thirty-one males to but seven females; namely, more than four to one; exactly the reverse of that seen in the first decade, when there were four females to one male. If any supposition or deduction can be drawn from so small a number of cases, is it not that during this busy period in men's lives, when the cares of life begin to press, it is most likely that a nervous affection of this nature should develop?

In the fourth decade, that from thirty to forty years of age, we find still a large proportion of the cases, namely, thirty-five, more than in the first two decades together. Here the males are two and half times the number of the females, namely, twenty-five to ten, the figures still supporting the nervous theory of the affection. In the later periods of life the disease is seen to be very much less frequent—indeed, it is rarely met with after fifty years of age. We find, then, that no less than seventy-three patients, or over sixty-one per cent. of the cases, were affected between the ages of twenty and forty. A negative argument against the alleged parasitic nature of the complaint is found in this fact, as it is well known that vege-

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table parasitic diseases belong largely to early youth, and are comparatively infrequent in adult life.

In the preceding table the ages of the patients were given at the time when they first presented themselves for treatment; this, however, does not exactly represent the age at which the disease appears, for in some of the patients it had existed for a considerable time before applying for relief. The following table gives the alleged ages at which the disease developed in those patients in regard to whom a record is found of the fact, namely, in ninety-seven cases.

TABLE II.—AGE AT WHICH ALOPECIA AREATA COMMENCED IN NINETY-SEVEN CASES.

Age.	Males.			Females.			Grand total.
	Private practice.	Public practice.	Total.	Private practice.	Public practice.	Total.	
5 years and under . .	2	1	3	2	...	2	5
5 to 10 years . . .	3	...	3	4	4	8	11
10 to 15 " . . .	8	...	8	5	1	6	14
15 to 20 " . . .	4	2	6	2	2	4	10
20 to 25 " . . .	8	2	10	4	0	4	14
25 to 30 " . . .	13	1	14	1	...	1	15
30 to 35 " . . .	4	2	6	3	1	4	10
35 to 40 " . . .	7	...	7	5	...	5	12
40 to 45 " . . .	0	1	1	1	...	1	2
45 to 50 " . . .	1	...	1	...	...	...	1
50 to 55 " . . .	3	...	3	...	...	...	3
Total . . .	53	9	62	27	8	35	97

In looking at this table we see that the figures still corroborate the deductions drawn from the preceding table. Thus, of the ninety-seven cases in which the age of the patient at the commencement of the disease was recorded, in no less than twenty-nine patients, or thirty per cent., it began between the ages of twenty and thirty years, and of these twenty-nine patients, twenty-four were males and five were females.

Table III. exhibits the duration of the complaint before the patient came under treatment. It would be very interesting to give also a table of the entire duration of the disease, but, unfortunately, so many of the cases pass from notice, especially in public practice, before a perfect cure is obtained, and so many patients are seen in consultation, or but a single time, that it is very difficult to secure accurate statistics on this point. From this table, however, we learn that the affection is by no means a brief or transitory affair, but that

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the baldness, which may begin with a single insignificant spot, may increase and remain, often resisting all treatment even for many years.

TABLE III.—DURATION OF ALOPECIA AREATA IN NINETY-THREE PATIENTS.

DURATION.	MALES.			FEMALES.			Grand total.
	Private practice.	Public practice.	Total.	Private practice.	Public practice.	Total.	
1 month and under	1	...	1	5	3	8	9
1 to 2 months	2	1	3	4	...	4	7
2 to 3 "	7	...	7	...	...	...	7
3 to 4 "	1	1	2	...	...	...	2
4 to 5 "	2	...	2	1	...	1	3
5 to 6 "	5	...	5	2	...	2	7
6 months to 1 year	8	1	9	3	2	5	14
1 to 2 years	5	1	6	2	...	2	8
2 to 3 "	3	1	4	2	1	3	7
3 to 4 "	3	2	5	4	...	4	9
4 to 5 "	3	...	3	3	...	3	6
5 to 10 "	6	...	6	...	...	...	6
10 to 15 "	1	1	2	...	...	...	2
15 to 20 "	2	...	2	...	...	...	2
20 to 25 "	2	...	2	...	...	...	2
25 to 30 "	1	...	1	...	...	...	1
30 to 35 "	...	...	...	...	...	...	...
35 to 40 "	1	...	1	...	...	...	1
Total	53	8	61	26	6	32	93

Of the cases here analyzed, namely, ninety-three, where the duration was recorded, thirty-five, or nearly half, had lasted six months before coming under treatment; in fourteen others the disease had existed between six months and a year; in eight it had lasted between one and two years; in seven between two and three years; and in nine between three and four years, and so on; while some cases are recorded as of twenty, twenty-five, and even thirty years' duration.

Alopecia areata, however, will occasionally be seen to be quite self-limited, or rather to get well spontaneously without medical aid. In a number of instances among these cases there is record of former attacks, where the bald spots have become perfectly covered without treatment, in a varying space of time from a few weeks to some months; the disease has then again developed, perhaps, after an interval of months or years, persisting then, in spite of treatment, for some considerable time. In other patients, suffering from quite different skin affections, we also occasionally get the history

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of one or more attacks of alopecia areata which have recovered spontaneously, and not returned up to the date of observation. But in my experience this spontaneous recovery is relatively rare, and in the larger share of instances it is not permanent.

The longest period during which I have observed a case is in connection with that of a young gentleman now nearly thirty-nine years of age, whom I first saw something over twelve years ago. The disease had begun in him at two years of age, when the hair began to come out in spots, until within a year or two he had lost all the hair and eyebrows. He wore a wig until fifteen or sixteen years of age, there being almost no attempt at hair reproduction, when, after spending a little time at Richfield Springs, the hair reappeared over almost the entire scalp, and he began to grow beard and whiskers, which at nineteen years of age were full and natural. Affairs remained in this condition until he was twenty-six years of age, when alopecia areata appeared in the beard, and soon new spots developed, until, when seen nine months later, about one-fourth of the hairy surface of the face and scalp was bereft of hair. In spite of pretty diligent treatment the trouble remained, and increased until he became almost entirely bald on the scalp and face, including the eyebrows and lashes, and he lost the hair also from the body and limbs, including axillæ and pubes. From this relapse he has never recovered, for, although the hair regrows to a slight degree here and there, he is still obliged to wear a wig, and there is almost no reproduction of the hair on the face. He, however, after the first few months, has never been very diligent in treatment, and has always been burdened with a rather vexatious business, and has also had considerable depressing nervous influences in his family relations.

Among the cases here analyzed there occurred thirteen cases—six males and seven females—in whom the disease was almost universal. Several of these recovered entirely; in one instance, a man acquired syphilis shortly after the hair had completely regrown from the alopecia areata, and within a few months the hair again fell, this time from the syphilis, in a very characteristic manner, quite different from that before presented, and again it regrew perfectly under anti-syphilitic treatment.

The limits of this paper do not permit of a further analysis of the cases, nor of the presentation of individual cases, many of which

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present points of very great interest, and I will pass to a brief consideration of the therapeutical aspect of the subject.

Successful treatment must ever depend upon a correct knowledge of the clinical history and nature of the disease, and a few words may be added in regard to this latter, without attempting, however, to enter the subject at all exhaustively.

From what has preceded, it is readily seen that I believe in the nervous origin and nature of alopecia areata. I may say that I have examined a large number of the hairs taken from patients with this affection, as also scales scraped from the surface, and have always failed to detect any parasitic elements; and I may add that in no single instance has the disease been presented to me in a manner to show contagion, as occurs constantly in favus and ringworm, and no two of my cases occurred in the same family. Time does not permit of the mention, or even of analysis, of the various researches on alopecia areata, and opinions concerning the disease. I may state, however, that Robinson, in the article referred to, shows pretty conclusively the untenability of the parasitic theory of the disease; but he also argues, though less forcibly, against its nervous origin. Robinson claims to have found the real cause of alopecia areata in micrococci, having "their seat specially in the lymph-vessels; that they give rise to inflammatory changes in the corium, and frequently coagulation of fibrin in the lymph- and blood-vsssels." He believes that "the interference to the growth of the hair would seem to depend, partly at least, upon the thickened bloodvessel walls, and, in recent cases, also upon the presence of coagula in the arteries and lymph-vessels, interfering with the nutrition-supply. If an artery should be closed, the hair could fall out very suddenly in an area of considerable size, namely, the area supplied by that vessel; or a considerable extent of lymph-vessels could be clogged, and the same result could follow."

The theory is a plausible one, and if these observations as to the existence of micrococci deep in the corium are confirmed by others, it may possibly be found that they have some pathogenic relations as to the ultimate causation of the disease. But, on the other hand, even if these foreign bodies were found to be present, it by no means follows that they are a primal cause of the disease in question. It is not claimed that they are acquired by infection from other cases, and the question arises as to whether they are not accidental, or a result rather than a cause of the disease under con-

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sideration. A theoretical argument has little worth in matters such as this, and, at any rate, we must await further researches on the subject. But even if these micrococci are an element of causation, the same arguments hold here as in other diseases, such as pneumonia, where they are detected, namely, that some condition of system or of the tissues is necessary in order that such microbes may find a footing and effect a development.

This brings us, therefore, to what I believe to be the true elements to be considered in alopecia areata, namely, the constitutional, and especially the neurotic, aspects of the cases. In proportion as I have regarded these in practice, so far have I had success in removing the alopecia areata, both at the time and permanently; whereas purely local treatment has never, in my hands, yielded thoroughly satisfactory results. I need not dwell long upon the actual methods and details of treatment, for they are such as will readily suggest themselves when a correct knowledge of the true nature of the complaint is obtained and borne in mind.

Patients with alopecia areata should be put in the best possible condition hygienically: for, although they generally seem to be in good health, careful investigation will often show some departure from the normal condition which has more or less bearing upon the disease. Thought may be especially directed toward nerve nourishment, and all my cases of late years which have done the best have been treated on this plan. The fats and phosphates should be increased in the dietary, and I always encourage largely the use of fresh butter, cream, fat of meats, etc. Milk is also of great service, if well borne; but, as I have fully explained elsewhere, this does not agree well with adults when taken in connection with other food. I direct it, therefore, to be taken absolutely alone, in the intervals between meals, say one hour before each meal, and at bedtime, provided this is three or four hours after the evening meal. The idea is, that as milk contains all the elements of nutrition, and is the substance from which the hair was originally grown, it will best aid in its later reproduction and nutrition. The phosphates are best found in whole wheat, and I encourage the use of whole wheat bread, also crushed wheat with cream, and any other preparation in which the phosphates abound; fish I believe to be beneficial in these cases, and I urge its use once daily.

The medicinal treatment is based on the same principle, and my best results have been obtained under the free and continued

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administration of strychnia with phosphoric acid. Arsenic is of moderate value, and should be given in alternation with the former. Cod-liver oil is also valuable, especially in patients who cannot or will not take the fats in their dietary; and some of the emulsions, with a large proportion of phosphates, serve the double purpose above indicated.

Locally, the whole treatment is summed up in the single idea of stimulation of the diseased patches. While parasiticides are not actually called for by any local parasite present, experience has shown that many of the remedies used for this purpose are also of benefit in alopecia areata. Bichloride of mercury, in a strength moderately to excite the skin, is frequently the best application; but my preference is for veratria in ointment, of a strength of five to ten or more grains to the ounce. Croton oil, strong carbolic applications, acetum cantharidis, capsicum, and other stimulating applications may also be used with advantage.

In conclusion, however, I am positive that the best results in the management of this often troublesome affection will be reached when it is looked upon, not as a local affair, but as a manifestation of a constitutional derangement, having its basis in lowered vitality of the nervous system.

XVI. Inebriety from a Medical Point of View.

By T. D. CROTHERS, M.D.,
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The subject of inebriety is attracting increased attention in all parts of the country, and is fast becoming a great national topic. But it is being discussed only by moralists, reformers, and politicians, and treated by the medical profession, to whom it properly belongs, with indifference. From a scientific point of view, inebriety is a question not of morals, but one of disease; a medical subject, a problem of the cause and effect of physical degeneration controlled by forces that may be known and prevented.

This is only the restatement of what has been affirmed for centuries past. Long before the Christian era Herodotus described inebriety as a drink-madness, and an affection of both body and mind. Diodorus and Plutarch called inebriety a disease which

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could be transmitted from parent to child. Chrysostom, at the beginning of the Christian era, compared inebriety to dyspepsia and called it a disease of the brain and stomach. A century later, Ulpion, the Roman jurist, wrote of the irresponsible character of inebriates, and the duty of the State to treat them as sick and diseased. On several occasions laws were enacted recognizing the disease of drink, and the degree of punishment for drink offenders. In 1747, Condillac, a French physician and philosopher, appeared as the first modern author who wrote clearly of the disease of inebriety. In 1790, Dr. Rush, of Philadelphia, elaborated the idea of disease in inebriety, and urged its separate treatment in asylums. In 1802, Dr. Cabanie, of Paris, declared inebriety to be a distinct form of mental disease. Prof. Platner, of Leipsic, in 1809, defended this view with great vigor and clearness, in two learned essays. Salvator, of Moscow, in 1817, published the first little work on the disease of inebriety and its treatment. Esquirol followed a year later describing this disease and its pathology. Buhl Cramner, in 1822, published a work showing inebriety to be a state of irritation of the brain and nervous system, which could be cured by physical means. This was the second work on this topic. In 1830, the Connecticut State Medical Society appointed a committee to report on the need of asylums for the medical treatment of inebriates. In 1844, the English Lunacy Commission urged that all inebriates should be regarded as insane, and sent to special asylums, and not punished as criminals. In 1852, Magnus Huss published a volume on chronic alcoholism as a distinct disease requiring distinct treatment. This was the third volume published. This same year this idea of disease was organized into the realm of practical science, in the first inebriate asylum in the world at Binghamton, New York. In 1870, the first medical society was organized for the special study of the disease of inebriety, in New York City; and in 1884, a similar medical society was organized in London, England. In 1876 the first medical journal was published at Hartford, Conn., devoted to the special study of the disease of inebriety; a similar medical journal began in 1885 in London. In the past ten years six distinct medical volumes have been published, treating of the causes, pathology, and treatment of the disease of inebriety, and over a dozen semi-scientific volumes have appeared discussing various phases of this subject.

Such is a brief outline of some of the leading facts in the history

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of the growth of the truth of the disease of inebriety. To-day there are over fifty hospitals for the treatment of inebriety as a disease, in active operation, there are two medical societies and two medical journals devoted to the subject; yet the knowledge of inebriety as a disease is practically unknown to the medical profession.

It will be of interest to outline the facts upon which the theory of the disease of inebriety is based. It is clearly evident that a disorder so widespread as inebriety must have an equally wide range of causes, and many complex conditions which enter into its growth and development. It will also be apparent that a knowledge of these causes must come from a study of the history of a large number of cases. Such a study must record all the facts of heredity, early surroundings, accidents, diseases, climate, food, social and physical environment, and all the various influences which have entered into life. From a large number of such histories many of the principal causes will appear. Thus, from the records of one hundred inebriates, representing all classes, sixty will be found with defective brain and nerve organization from inheritance; thirty or more of these will have moderate or excessive drinking parents or grandparents; twenty will have insane, epileptic, criminal, pauper, idiotic, and eccentric ancestry; ten will have consumptive, rheumatic, and diseased parents. Of forty who have no prominent history of heredity, twenty-five will begin after attacks of severe disease, or injury, mental shocks and similar causes; ten can be traced to climatic states, to foods and occupation, and in five no special causes can be determined. Causes are often blended; nutrient disorders, overwork and exhaustion, or mental strains and heredity, may all be found associated in the causation.

A close examination will show how exact these causes are, and the laws which govern them. Thus, in direct heredity, moderate, excessive, or periodic drinking parents are always followed by inebriate children, either in the first or second generation. In these cases some specific degeneration of the brain centres has been transmitted. Many inebriates are found to have parentage representing all degrees of insanity, eccentricity, and mental oddities; or criminals and paupers, with low intelligence, and defective characters; hysterical, ungovernable passions, and unbalanced organizations. Inebriety in the children of such characters is only another phase of degeneration. Inebriety frequently appears from insignificant causes in the children of consumptive or rheumatic

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parents. In others it follows injury to the head, severe sickness, or some profound shock. Another class of inebriates are made so by states of climate, food, surroundings, and occupation. Thus, alternations of extreme heat and cold seem to be active causes of drink impulse. Firemen, stokers, and others, on Southern steamers which sail from Northern ports, subject to the sudden changes from the frigid air of New York and Boston to the equator, generally become inebriates. A few years ago, Dr. Bowditch, of Boston, pointed out a drink belt, crossing the civilized world, in which spirits were used to great excess, on either side of which inebriety shaded down, less and less, into comparative sobriety. In all probability climate is very active as a predisposing cause. The rushing civilization of to-day brings strains upon the brain which favor the growth of inebriety and insanity.

All medical study of inebriety sustains the fact of its disease and curability. It also brings evidence that this disease is not alone dependent on the abuse of alcoholic drinks, nor on will power or the absence of it, but is clearly the result of brain and nerve degeneration. It is practically brain failure in which both functional and organic disease are present.

This disease has a practical interest to every medical man, because it is associated with many of the disorders commonly seen in every-day practice. Indirectly it is noticed in complex neuroses of almost infinite variety and complexity, for like the obscure symptoms of syphilis, the degenerations exceed that of any other affection; directly, the effects of inebriety are seen in the insanities of inebriety, such as delirium tremens, and in more clearly defined organic troubles, and degenerations which alter the restorative processes.

From a medico-legal point of view, the disease of inebriety is one of the most important medical questions of the day. At this time there are over thirty inebriates awaiting trial for capital crime committed while intoxicated, in the New England and Middle States. The results of each trial will turn on the testimony of medical men, who should answer the question from a scientific standpoint. In New York there are three wills contested, involving immense sums of money, the issue of which will depend on the evidence of physicians concerning the nature and character of inebriety. At this moment many of the most important legal questions, involving pecuniary and personal interests and the order and

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stability of society, originate or are intimately associated with inebriety. Public opinion is turning to physicians for counsel and explanation, instead of the confused testimony given in every court-room by them.

The host of inebriates are not the result of chance or accidental conditions; they are the growth and development of distinct causes, as clearly traceable as typhoid or yellow fever, which can only be understood by a thorough medical study by medical men. The solution of the great problem can never be reached until the medical profession takes up this study and points out the causes and remedies.

XVII. On Chronic Headaches of Functional Origin.

A CLINICAL AND ETIOLOGICAL STUDY, BASED ON RECORDS OF TWO HUNDRED CASES.

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The trigeminal nerve is the most sensitive and highly differentiated of all the cutaneous nerves. From the beginning of mammalian life it has been at the front in the struggle for subsistence, and has received constantly an excess of stimulus over other sensory nerves which has educated it to the very highest degree of delicacy and responsiveness. Spread over the face and cranium of man, it gives to him the best information that skin and muscles can anywhere afford, and is a source of protection and information, as well as of æsthetic gratification.

The penalty paid for this high degree of evolution of the trigeminus is its readiness to the assaults of disease and its response to almost every pathological irritation. Headache and head-neuralgias are the most common of mortal afflictions, and may be symptomatic of almost any disease.

I intend, therefore, to speak now only of chronic and chronically recurring headaches of functional origin, but expressly excluding migraine. What I have to say is based chiefly on an analysis of 200 cases of functional, non-migrainous headaches, whose records I have preserved.

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PATHOLOGY.—Headache is, strictly speaking, a form of neuralgia. It has a diffused character, owing to the part of the nerve involved.

The *seat of headache* is the external envelope of the skull and the dura mater; in rare cases only the skull being involved. The *nerves affected* are, first, the trigeminal, which supplies the face and scalp as far back as a vertical line from the vertex, and the dura mater of the anterior three-fourths or more of the cranial cavity; second, the four upper cervical nerves which supply the posterior scalp and neck; and, third, sensory branches of the vagus which supply the posterior fossa of the skull. The pia mater has vasomotor but no sensory nerves, and the brain-substance is insensitive to pain until one strikes the prolongations of the sensory tracts in the brain axis and basal ganglia. Sensory impulses from the face, scalp, or meninges flow along the trigeminus, cervical nerves, or vagus; they pass up through the sensory tracts in the medulla and pons, connect with nodal nuclei here and at the base of the brain, and finally impinge on those parts of the cerebral cortex which are known as the motor areas.

There are three types of head-pains, viz., headache, neuralgia, and migraine. *Headaches* are caused, as a rule, by diffuse irritations located in or referred to the peripheral ends of this tract. *Neuralgias*, on the other hand, are caused by irritations of the trunks of these nerves. The cortex itself may, perhaps, be the seat of a headache, but then it is a psychical pain and of the nature of a hallucination. *Migraine* is a periodical neurosis in which there is a discharge of nerve force not only affecting the trigeminus, but often other cranial nerves as well as sympathetic fibres.

In chronic non-migrainous headaches, the periphery of the nerves supplying the dura mater is oftenest affected, and headaches are called by some intrinsic pains, while neuralgias are called extrinsic. In reflex, or, strictly speaking, transferred head pains, the irritation is shunted off or diffused over from the original irritated nerve upon the central tracts of the trigeminus, or cervical or vagal nerves. The explanation of this is easy: The trigeminal nerve has central tracts which very easily awaken sensations in consciousness. The innumerable excitations of this nerve have broken a broad pathway to the cortical areas. On the other hand, the vagus branches to the stomach, for example, cannot by stimulation so easily arouse a conscious sensation; the nerve impulses started in it

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by an undigested bolus of food, therefore, pass up to the medulla, and then flowing over take the easier path to the cortex, viz., that of the first branch of the trigeminus, and the patient has frontal headache.

ETIOLOGY.—Chronic and recurrent headache is always a symptomatic trouble. We know of no such thing as essential or idiopathic headache aside from migraine. Its study, therefore, is naturally limited chiefly to the subject of etiology and treatment.

Predisposing causes. My patients represented a city population; many of them living in bad hygienic conditions. The etiology of their troubles applies pretty correctly to headache in general, but no doubt somewhat different results would be reached in another country, a different climate, and in rural districts.

Sex. The males number 53, females 147. This gives a ratio of about 3 to 1 in favor of the female sex, and shows a greater preponderance relatively of headaches than of neuralgias in general, in which the ratio is as 5 to 3. Headache belongs still more than neuralgia to woman.

Age. The headache ages are from 10 to 25 and 35 to 45; most cases occur between the ages of 8 and 25, especially in females. The number of headaches increases gradually from the period 5 to 10 years up to the period 15 to 20, then falls till the 35th year, and rises again till about the age of 40. Early childhood and declining age are practically exempt from chronic functional headaches. The increase of headaches as middle life approaches is really greater than is apparent from the figures, since there are nearly one-third less persons living at the age of 35 to 45 than at the ages 10 to 20.

The exciting causes are:

1. Hæmic causes, in which impoverished or poisoned blood is brought to the brain, as in: (*a*) Anæmia. (*b*) Diathetic states: gout, rheumatism, diabetes, etc. (*c*) Infections: malaria, syphilis. (*d*) Uræmia.

2. Toxic causes: lead, alcohol, tobacco, etc.

3. Neuropathic states: epilepsy, neurasthenia, chorea, hysteria, neuritis.

4. Reflex cause: ocular, naso-pharyngeal, auditory, dyspeptic, sexual—uterine.

5. Organic disease.

This classification of headaches based on the etiology is very much like those usually given. I have not included the so-called

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hyperæmic or congestive headache, however, because I have never met cases of this character which I did not think were in reality migraines, or the results of organic changes following sunstroke or meningitis. Even the much-quoted anæmic headache is rarely due to anæmia alone, as close observation will show.

The relative frequency of these different types was found to be approximately: Hæmic and toxic forms, 35 per cent.; dyspeptic reflex, 25 per cent.; other reflex, 10 per cent.; neurotic, 20 per cent.; organic, 5 per cent. The great majority of chronic functional headaches are thus seen to be due to bad states of the blood—*i. e.*, toxæmias and auto-toxæmias—and next, to disorders of the gastro-intestinal tract. Such disorders cause headaches which are partly reflex, but sometimes there is no doubt a toxic element due to absorption of ptomaines of great importance in them.

Of the typically reflex headaches the ocular rank first, while but few were due to nasal or aural irritation. Next come the headaches of neurasthenia, epilepsy, and hysteria.

The toxic and diathetic headaches preponderate in the young, 27 out of 45 being under twenty years of age. The dyspeptic headaches belong to the age above twenty (19 out of 29) as do also the neurotic and organic head pains. On the other hand, ocular headache is more frequent in the young (66 per cent. under twenty).

In studying the etiology of headaches a question of much interest is that of the location and character of the pain. Roughly speaking, we have: 1. Frontal headaches, 2. Occipital headaches, 3. Parietal and temporal headaches, 4. Vertical headaches, 5. Diffuse headaches, and various combinations of the above. The most common form of headache is the frontal, next the fronto-occipital or diffuse, next the vertical, and then the occipital.

The significance of the location of the pain is a thing which has been studied with some care of late years. In making any general statements regarding this matter it would be safer and easier to speak of what does not cause a certain kind of headache than of what does. For example, frontal headaches are rarely, if ever, due to uterine or pelvic irritation; neither are they due to aural or pharyngeal causes. Nor are they often due to troubles with the muscle-innervation of the eye. They rarely occur as pure frontal pains in the epileptic and neurotic. Vertical headaches are rarely of toxic origin, and occipital headaches are not caused by anæmia or toxic conditions.

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Modern studies of the subject of headache have brought into especial prominence the reflex factors in their causation. While the work of seeking for reflex causes has been probably overdone, yet much of practical and scientific interest has been elicited. A brief review of this aspect of the etiology of headache may be in place here.

Ocular headaches. At the present time the eye is credited with giving rise to an immense number of head pains. Their location and character depend not only upon the pathological condition of the eye, but also upon the constitution and occupation of the patient. From my investigations, it seems to me that the most general rule which one can formulate is that headaches from refractive errors are usually frontal or orbital; those from muscular insufficiencies are more often occipital and cervical.

Naso-pharyngeal headaches. Nasal inflammations and hypertrophy cause dull frontal or diffuse headaches. Enlargement of the pharyngeal tonsil may cause a dull, recurrent, occipital pain (Gradle, *Journ. Amer. Med. Association*). Follicular tonsillitis and hypertrophied tonsils may cause diffuse headaches; and in children obstruction of the Eustachian tubes may cause a diffuse headache.

Auricular headaches. Disease of the middle ear has been observed to cause temporal and occipital pains.

Gastric headaches, or *dyspeptic headaches,* when not accompanied with constipation, are often occipital, but sometimes frontal. Constipation and intestinal irritation usually cause a diffuse frontal headache.

Uterine and *ovarian headaches,* headaches from pelvic irritations, are almost always occipital and vertical. It is very rare to find pelvic irritations referred to the fifth nerve. The view of Valleix, that most headaches were of uterine origin, is not at all supported by modern observation.

A few words may be said regarding the character of some of the other kinds of head pains.

Neuropathic headaches. The typical hysterical headache or boring pain (*clavus*) is one rarely observed by me, and is often associated with spinal irritation. The neurasthenic headache is frontal and vertical, and is usually associated with a sensation of pressure or weight, and often with various cerebral paræsthesiæ. In spinal irritation, however, in its incipiency, or in mild types, there is a boring, occipital pain; while a still earlier symptom of a

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neurasthenic state is a neckache, or feeling of neck weariness, which the patient notices after trying to sit and hear a preacher or lecturer, or watch a play.

One type of the neurasthenic headache is frequently met with in brain-workers, coming on whenever the mind or the eyes, or both, have been much overtaxed. Slight disorders of the eye or stomach, or a rheumatic or gouty tendency, are assisting factors in these headaches, and they are relieved by rest; or temporarily by antipyrin, an antirheumatic, or a bromide.

The *epileptic* headache is usually very severe, sharp, often vertical or occipital, not diffuse. It has more the character of a neuralgia.

The *organic headaches* are, as a rule, very characteristic. They are violent in character, and often associated with feelings of fulness and throbbing; nausea occurs frequently. They usually remit for a time, and then exacerbate. They are associated with other symptoms which usually make a diagnosis not difficult.

Syphilis causes a headache which is sometimes coronal or temporal, and is almost always partial, involving only a certain area in the skull. It is worse at night, and often comes on periodically, like a malarial headache.

SYMPTOMATOLOGICAL CLASSIFICATION.—The term headache means a different thing with different persons, and in different types of the disease we have: 1. Pulsating, throbbing headache. 2. Dull, heavy headache. 3. Constrictive, squeezing, pressing headache. 4. Hot, burning, sore sensations. 5. Sharp boring pains.

The first form characterizes headaches with vasomotor disturbances and usually indicates migraine. The second is a toxic, dyspeptic type. The third is found in the neurotic and neurasthenic. The fourth in rheumatic and anæmic cases. The fifth in hysterical, neurotic, and epileptic cases.

SYMPTOMS ASSOCIATED WITH HEADACHE. — The symptoms oftenest associated with chronic and recurrent headaches are vertigo, somnolence, sensations of heat and pressure (cerebral paræsthesiæ), and nausea. Vertigo goes oftenest with headaches of dyspeptic origin; some of the so-called bilious headaches of early life develop later into attacks of vertigo; vertigo I found oftenest with frontal headaches. Somnolence I found oftenest with anæmic and malarial headaches; it occurs also with syphilitic pains. Nausea I found oftenest with occipital headaches.

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THERAPEUTICS.—The study of the etiology of chronic headaches is also a study of the therapeutic side; yet some general remarks may be made on this subject, approaching it from a different point of view.

The *treatment of headaches of young children*, for example, brings us into an almost special line of cases. In the city of New York at least, these headaches are best treated, as a rule, by giving small doses of the iodide of iron or the citrate of iron and quinine. In school children headaches have often to be treated by removal from school, the use of tonics, change of diet, and the application of glasses suitable to any eye-defects that may be present. But glasses should be the last thing tried, unless the visual trouble is very marked. In some children arsenic acts well.

As to the *therapeutics of headaches of adults:* Headaches among brain-workers require, as a rule, a different class of remedies to those among muscle-workers. In the former class nervines like antipyrin, caffein, the bromides, act well, while attention to diet, exercise, and the eyes is especially required. Among the laboring classes, especially women, anæmia, malaria, syphilis, and rheumatic influences must often be attended to. There are sexual differences also to be borne in mind. In my experience, for example, antipyrin has been much oftener successful in men than in women. This may, however, be only a coincidence.

I shall conclude the subject of therapeutics with a few remarks on symptomatic remedies. Among the best of these is muriate of ammonium in large doses, ʒss to ʒj, given in wafers. In the headache of neurasthenia, I have found that gr. v of menthol in hot water gives relief. In my wards at Bellevue Hospital a combination of menthol gr. v to x, and antifebrin gr. v to x, is often used. Phenacetin is also a good remedy. A practical point of importance in the use of antipyrin is the dosage. Often the best results are gotten by small doses frequently repeated. The much advertised effervescent preparations for headache contain too small a dose of caffein or of bromide to be of the best service.

Of local applications a spray or lotion of aconitia; sheet lint soaked in twenty per cent. solution of menthol and wrapped on the head; solutions of cyanide of potash after the method of Trousseau; Rithet's tobacco and quinine snuff, are some of the measures indicated.

Every one meets now and then with cases of headache of obscure

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origin, obstinate in character and intractable to every kind of treatment. The use of iodide of potassium and of the strong galvanic current and static electricity has been of service to me in some such cases. The possibility of a diffuse neuritis as a cause of the pain in certain of these cases should be borne in mind.

XVIII. A Contribution to the Surgery of the Spinal Cord.

By ROBERT ABBE, M.D.,
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The surgery of the spine is one of the new chapters soon to be written, from which much may be expected. As yet, however, so little work has been done or published that statistical tables upon the subject are untimely and of little profit. It should be a surgical axiom that every novel case of operative interference should be published, and I shall therefore present concisely, for our study, two cases that have recently come under my care, deducing such practical lessons as may be deemed important. I have the pleasure of showing you the patients themselves.

Case I. *Extra-dural tumor of the spine; paraplegia complete; operation; recovery.*—The first case of note is a man aged twenty-two, who was in excellent health up to January of last year, when pain in his back was his earliest symptom. He had no other symptom when admitted to St. Luke's Hospital, in March following. The spine was flexible and without deformity. A slight fulness was thought present in the soft parts of the right of the spines of the ninth and tenth dorsal vertebræ, where tenderness on pressure and some pain on motion were apparent.

Dr. Kinnicutt, under whose care he came, treated him by iodide of potash, quinine, blisters, and other remedies, though unable to elicit any history of syphilis or tuberculosis, and quite soon diagnosticated a tumor of the spine. Four weeks later the swelling of the soft parts had markedly increased, so as to make an induration of the parts two inches wide by three inches along the spine. Tactile sensibility now began to be disturbed in both legs, and then muscular power began to go. At the same time there was a line of hyperæsthesia around the abdomen which marked the limit between the anæsthesia of the legs and the normal abdominal skin. Two weeks later he could not stand without support. After this his power in the legs rapidly disappeared. He had annoying, uncontrollable twitchings of the legs, which were cyanotic when allowed to depend from the bed. The spine

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became rigid and very painful; the legs absolutely anæsthetic; abdomen tender and hyperæsthetic. A wasting hectic had set in. On May 10th he was growing rapidly weaker; had constant intercostal pain in the lower ribs, with girdle pains about the limiting line of disease. There was involuntary muscular twitching, with increasing incontinence of urine and feces. By May 25th, affairs had gone from bad to worse, the man lay in an apathetic condition, suffering from the slightest motion of the spine, and with girdle and intercostal pains unabated. The presence of an active hectic led one to fear a serious general infection. A final consultation was held May 29th, at which Drs. Seguin, Weir, Peters, Kinnicutt, Bull, Ridlon, Murray, Shaffer, and myself were present. Previous explorations of the swelling had shown nothing, but to-day a drop of thick, shreddy pus was obtained, and on the following day I operated.

May 26, 1888. Under ether, an incision was made, six inches long, close to the spines, from the sixth to the twelfth dorsal. The laminæ being uncovered, some thick broken-down tissue and pus were scraped away. The laminæ were already bare of periosteum, and the spines and laminæ of the eighth, ninth, and tenth were cut away by rongeurs. This revealed a dense mass of tissue and desiccated pus, occupying the entire calibre of the canal and extending up and down in all two and a half inches. This compressed the cord tightly against the anterior wall. It was rapidly and thoroughly removed by a sharp Volkmann spoon, until sound bleeding tissue was left on every side. The cord was not seen to pulsate. The cavity was packed with iodoform gauze—after bichloride irrigation—and an antiseptic dressing and plaster-of-Paris jacket applied.

On the eighth day sensation began to return. In the fourth week he began to move his left leg and the toes of the right. His fever rapidly left. Pain disappeared, and appetite returned. In six weeks he moved both legs well. In ten weeks he went about in a rolling-chair. The third month, walked with crutches. At four and a half months, walked pushing a chair.

It is now eight months, and you see he walks well without support, is stout and hearty, and since the operation absolutely without fever or evidence of tuberculosis. The tumor tissue was examined for bacilli, but nothing but cellular-tumor elements and pus found.

The clinical evidence leads me to believe the neoplasm began between the theca and the posterior arch of the vertebræ, and then broke down, involving the bone. The bodies of the vertebræ are perfectly sound.

CASE II. *Intractable brachial neuralgia; nerve-stretching, amputation, and, finally, intra-dural division of posterior roots of the sixth, seventh, and eighth cervical nerves; improvement.*—This second patient is one whose malady is more complicated, whose recovery is not yet so brilliant, but whose operation stands, thus far, quite unique:

Mr. I. R. T. is forty-four years of age, an iceman. He was referred to me three months ago by Dr. C. L. Dana, of New York, to see if I were willing to undertake an operation, conceived by him, to relieve the patient of

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one of the most intractable of neuralgias of the right brachial plexus, appearing in the arm and forearm. The essential features of the operation were carried out as planned from the first by Dr. Dana. The patient's history is as follows:

Prior to this trouble he had no disease—rheumatism, malaria, or specific. During the war an exploding shell left a small piece of itself in his left shoulder, which was extracted on the field, and left only a small flesh scar; never otherwise injured. One year ago last May, he spent a day putting in a zinc lining in a butcher's large refrigerator, and on the night following he first had a throbbing pain, localized in a single spot on the posterior surface of the right forearm, above the middle. The pain kept him from sleep. It was continuous at that site, but about one week later there was added a paroxysmal pain giving a peculiar twitching sensation in the thumb, index, and middle finger of the same hand. He was treated by electricity, blisters, counter-irritants, and internal medication, by excellent doctors, but his arm grew steadily worse. The pain was still localized over the forearm, and supplemented by the paroxysms of painful twisting sensation. There seems to have been distinct muscular spasm with the sensation of pain.

During the spring of last year there had ensued a disablement of the hand. The fingers were not readily closed nor extended. The hand was kept in a stiff position, the fingers semiflexed. The forearm and hand were slightly emaciated. There was atrophy of muscle in the interosseous spaces. Dr. Dana and others then saw him, and a diagnosis of ascending neuritis was arrived at. At this time he came under the care of Dr. W. T. Bull, at the New York Hospital. After a week the patient begged an operation, and the doctor stretched the posterior interosseous and ulnar nerves. The pain was not improved. If anything, it was worse.

On July 16th, at the patient's earnest request, the arm was amputated by Dr. Bull above the humeral insertion of the deltoid, and above any site of local pain heretofore complained of. The wound healed by first intention. As far as the eye could judge, all nerves in the arm were in a normal condition. When the wound had healed it was found there was no abatement of pain. It still had a "drawing" character, and he could feel the fingers twist just as if they were on. He left the hospital August 1st, if anything, complaining of more pain than before. He then came under the care of Dr. William Kemp, of New York, who again sought Dr. Dana's counsel. The patient had now got in the habit of taking morphine, one-half grain every hour, to destroy the pain.

Of this interview Dr. Dana writes me thus:

"On September 25th I examined him again. The arm had been removed. The patient said he felt no better. There were twitchings and tonic contractions in the muscles of the stump. The patient had the Brauch-Romberg symptom, swayed in standing, and had a tendency to fall to the right when walking with eyes closed. Knee-jerks exaggerated and ankle clonus in right leg, all of which might be due to the morphine he was taking. There

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was much stiffness in the neck muscles. The patient could not rotate his head completely to the right, nor draw the head down to the right shoulder. The diagnosis, so far, had been neuritis—and of this there could be no doubt. The question was whether it might be due to a tumor or inflammatory process, either extra-spinal or extra-dural. An exploratory operation was advised with the idea, if no tumor was found, of cutting the posterior roots of the nerves transmitting pain. If it were a tumor, *that* could be removed. If it were ascending neuritis, cutting or resecting the nerve might stop it while cutting the posterior roots would cause an ascending degeneration and destroy the sensory tract, even into the spinal cord."

At this juncture he went to Dr. Seguin for a month, and returning to Dr. Dana, was sent to me at St. Luke's Hospital. His condition then was as follows:

November 2. Had grown thin, was careworn and hollow under the eyes. Appetite fair, tongue coated. No fever. He gives evidence of sharp pain, every few minutes, in the stump of his right arm, and usually doubles over and grasps the stump with the other hand. When asked about it, says it jumps and the stump draws to his side when the pain shoots into the hands and fingers, as if they were still on, and he can feel them all drawn up. The pain seems to be genuine, and the recurrence every five or ten minutes. He says, also, that it keeps up all night. Muscular atrophy is beginning to be marked about the shoulder, either from disuse or degeneration. The deltoid, supra- and infra-spinati, and biceps are atrophied; while the latissimus dorsi and pectoralis major are short and thin, but still act strongly when called upon. A small, tender neuroma of the musculo-spiral nerve in the stump can be felt, and on pressure gives the same pain as is generally complained of.

7th. Dissected out the neuroma under cocaine.

24th. Not relieved by the removal of the neuroma. Urine 1.024, no albumin or sugar. Some oxalates.

December 31. Operated under ether, Dr. Bangs assisting, in the presence of a number of prominent neurologists and surgeons. The usual surgical precautions were carried out. An incision was made along the ligamentum nuchæ, on the right side, from the third cervical spine to the first dorsal. Tha soft tissues were quickly separated from the spine, and the right half of all the laminæ well out on the articular processes. With rongeurs the laminæ were quickly gnawed away from the spine to articular processes—thus bringing into view the rather full pulsating dural membrane of the cord.

The seventh, sixth, fifth, and half the fourth vertebræ were thus treated. Severe venous bleeding from under the latter was only controlled by an aneurism-needle protected by cotton and hooked up beneath the bone. Over two inches of dura was exposed. It was soft and allowed the finger pressure to feel the cord. No tumor was thus detected, nor did a director passed up and down the canal feel anything like tumor. There was no inflammation or disease of the hard parts. With a heavy curved hook I then explored

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the intervertebral foramina, and drew back the sixth nerve by hooking under it and pulling gently, so that a short loop of it was raised on my hook outside its point of exit from the dura, but inside the vertebral canal. Upon this root, thus raised, I applied a small metal electrode, while the opposite pole (a sponge electrode) was held on the back. Dr. Dana noted the effect. The same was tried on the seventh nerve, with less effect. My own observations, as did those of Professor Markoe and others, coincided with Dr. Dana's. He writes: "On the day of the operation, a faradic battery of one cell, moderate current, was used. A sponge electrode on the back, a metal point electrode on the nerve. When applied to the sixth nerve, just external to the dura, it caused contraction of the supra- and infra-spinati, rhomboid, latissimus dorsi, pectoralis major, teres, and deltoid. The results of electrizing the seventh nerve were not so satisfactory, it not being certain that the point reached that nerve alone (on account of fluid that collected around the electrode). It was impossible to drag out the fifth nerve without exciting more hemorrhage from the venous sinus." The eighth nerve also was hidden below the bone, and it was thought enough had been done. The sixth and seventh were then again raised up from their beds and cut square across just outside the dura. Both motor and sensory roots lie together at this point, so that they must have been severed. The wound was packed, entirely open, with iodoform gauze covered by a voluminous gauze dressing. He bore the operation well, but soon found his old pain seemed much the same—still low down in the hand.

January 2. Forty-eight hours after the operation I felt that I ought to divide at least one more branch (the eighth), if I could do so, in order to reach the lower arm pain, and if possible to examine the spinal cord, inasmuch as Horsley had not detected the tumor in his celebrated case until he had opened the dura. I therefore determined to proceed as follows: place the man prone, without ether, and open the dura, so as to get a clew to the sensations of the nerve-roots when handled. With the assistance again of Drs. Dana, W. T. Bull, and others, I operated.

The patient was placed under a brilliant light, face downward, so as to maintain the operated part as the highest of the spinal axis. I carefully removed the packing, revealing a large, clean, dry wound, at the bottom of which lay the dura, throbbing and sound. Puncturing it with a knife, I slipped in a fine director and slowly let out the spinal fluid until it ceased to run. Then I slit up the dura for one and a half inch. The cord and membranes looked sound. The effect of evacuating two ounces of spinal fluid (carefully collected and measured) was practically *nihil*. The pulse did not change, and he experienced no sensations or pain. The dura was scarcely at all sensitive to cutting. I now picked up the roots of the eighth nerve within the dura at the level of the seventh nerve outside.

It looked normal, but I cut it close to the posterior columns of the cord, and then slipped off one-fourth of an inch for microscopical examination. Handling this nerve-root gave him the greatest pain of anything I had done, and of a kind exactly corresponding with that which he constantly suffers. I had reason to hope, therefore, we had reached the offender. In

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addition I cut also the posterior roots of the seventh nerve, close to the columns of the cord.

In two operations, therefore, I had cut the sixth nerve, both roots, outside; the seventh, both roots outside, and also the posterior root inside; the eighth posterior roots only inside the dura. It was observed that the contact of even a blunt instrument to the posterior columns gave a sharp agonizing pain over the entire body, the patient crying out, "Ah! I *can't stand* it."

We again tried the battery, and with regard to it Dr. Dana writes: "On the second trial, the patient being conscious, stimulation in the same way—of the peripheric end of the cut sixth nerve—caused contraction of the supra- and infra-spinati and rhomboid. Of the seventh nerve, contraction of the pectoral, latissimus dorsi, and adductors of the arm, with pains such as he usually suffers. Of the eighth nerve, similar contraction and intense 'drawing pains,' exactly such as is usually felt."

The slit in the dura was now sutured with fine catgut. A little cocaine had been injected subcutaneously along the cut half an hour before, and this allowed of painlessly suturing the entire length of the wound. Immediate union was thus obtained by second intention, and leaves a small linear scar. The patient had more or less pain in the arm in the next ten days, but it changed in character. It no longer went down into the fingers. It was a "drawing of the stump," as he expressed it. It ceased to go up on the shoulder as it once did. He was allowed enough morphine to quiet pain for eleven days, when I deemed it best to let him sit up and stopped the drug entirely.

He missed it, but quickly got used to it, and since has had even less pain than when he was getting his morphine to quiet it. He walked freely at the end of the third week, and soon went in the open air. His gait is now as steady as for months past, and he can walk a crack in the ward any distance.

His temperature was 101° F. on the second day, and 102° F. on the fourth, but declined from that to normal on the tenth. The appearance of the upper arm and stump is one of increasing atrophy. There is no voluntary movement of the supra- or infra-spinatus, deltoid, or biceps, but there is of the latissimus and pectoral, though both are shrunken from disuse. There is anæsthesia of the skin of the entire outer side of the arm from the deltoid region downward, extending across the neck from the centre of the clavicle to the centre of the scapula. This area of the skin showed a short period of irritability, without sensation, from the fourth to the eighth day after the root section, as shown by getting quickly and persistently suffused when brushed over or handled; but when pinched retaining an extreme blanching at that point, which did not recover for two or three minutes. This entire area is now, however, normal in appearance.

In considering the lessons drawn from these cases it is to be remembered that in any path of study knowledge never comes entire at once, but piecemeal. Truth presents herself in fragmentary form, and we put the pieces together; so that, while I do not pre-

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sent the case of cervical operation as a brilliant result as yet, so far as completely relieving the pain goes, I offer it as a unique case making a quick recovery from an operation, as conceived by Dr. Dana, at once simple and scientific.

The other case of spinal pressure from a degenerating tumor successfully operated on, and restoring the man to health, is the only one I find on record in this country, though others have been recorded abroad—MacEwen, of Glasgow, claiming to be the first to accomplish this result, five years ago. Since that time he has operated on five cases, two of whom died of tuberculosis.

Most cases of pressure-myelitis have no striking hectic fever. Yet two of MacEwen's cases had at the time he operated, and these two died. He, therefore, draws the conclusion that no case is "fit for operation in which the temperature does not run an even, regular, and continuously afebrile course." He shows thereby a suspicion that the pressure-myelitis paraplegia, plus the hectic, indicates a diffusion of tuberculosis. The case you have seen, therefore, stands of itself as an argument to refute this error, for the removal of the one focus of trouble entirely dispelled the hectic.

MacEwen's cases show, happily, that improvement does not cease at six months. His patients, just able to get along without crutches at six months, could walk many miles two or three years later.

With regard to the case of neuralgia of the arm, no indisputable diagnosis had been made prior to my operation. The man had neuralgia, but the cause of it, even such eminent neurologists as Drs. Dana, Seguin, Amidon, Starr, and others, were not united on. It was believed to be ascending neuritis, but might be spinal tumor, or a delusional pain (Seguin) aggravated by morphine.

The language of pain is not at all times plain. If it were an ascending neuritis, could we expect to relieve it either by nerve-stretching, amputation, or neurectomy? It has always been acknowledged difficult to get ahead of a neuritis of this type. The late Dr. Sands operated once on a case similar to this man's, by excision of all the roots of the brachial plexus in the neck, but found it very hazardous and unavailing. It also left the arm powerless. It seems to me reasonable that the posterior roots should be severed alone, as they alone transmit sensation to the cerebrum. The operation has endorsement from neurectomies of the sensory fifth nerve for the cure of tic douloureux.

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In the report of the examination of the excised posterior root of the eighth nerve, made by Dr. John H. Thacher, Pathologist of St. Luke's Hospital, he says: "The sections show inflammatory exudation in moderate degree on the surface of the nerve-root and along the larger vessels inside of the fasciculus." Thus the diagnosis of neuritis is established.

There remains one point for consideration which this case of section of the sixth and seventh nerve will help to elucidate. The exact supply of the nerve-roots to the muscles of the arm has been somewhat a matter of conjecture, and frequently subject to revision. William Thorburn, of Manchester, has only very recently published the results of study of many cases of fractured cervical spines, in which nerve-roots were injured with varying paralyses. The conclusions from this attractive and well-observed series of cases seem to leave some gaps in testimony, and errors which further study will correct. My case gives some points of value. Thorburn places the pectoralis major and latissimus dorsi muscles in the supply of the sixth root. Yet in my case these are not paralyzed, though I have cut the sixth and seventh. Therefore these must be largely innervated from the fifth. That there was no error in identifying the sixth, is shown by the supra- and infra-spinati supply and the anæsthetic area.

DISCUSSION.

Dr. C. L. Dana, of New York: There is very little that I can add, except a word regarding the physiology and the medical aspect of the operation. This is an exploratory work in a measure; these cases have hitherto been considered incurable—the disease is one which does not yield to any ordinary measure for its relief. My idea in suggesting resection of the posterior roots was this: you secure a secondary degeneration which ascends into the spinal cord, and which extends along certain parts of the sensory tract; perhaps, in some cases, it goes no further than the central gray matter, but there results at any rate a painless degeneration, which practically eliminates the sensory tract for some distance in the spinal cord. We ought, in this way, to prevent the irritation of neuritis. There is one weak point, perhaps, in this operation, as Dr. Abbe has already shown, viz., that the channels carrying pain sensations from the arm, pass up into the cord through a number of roots. We may learn from this case that we ought to resect more roots than was actually done, but that would not be a diffi-

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cult thing to do. Dr. Abbe has not made a mistake in counting the nerves, because the anæsthesia he has produced in the shoulder was due to the cutting of the sixth nerve, which supplies this part. The continued power of movement of the pectorales is due simply to the fact that these muscles are innervated by several nerve roots. I have prepared a table which shows the distribution of the motor and sensory roots of the sixth, seventh, and eighth cervical and first dorsal, according to the experiments and pathological observations made by Fèrè, Starr, Thorburn, Ferrier, and Yeo, and finally those by Dr. Abbe and myself, upon this question, and a comparison will show some interesting facts, and some which will be of practical value.

In regard to showing the sensitiveness of the cord, this case is, I believe, the first on record where an unanæsthetized man has had his cord handled. The posterior roots when picked up gave pain in the parts of the limb only supplied by them. The preëxisting neuralgia had been greatest in the forearm, supplied by the eighth cervical and first dorsal nerves, and in correspondence with this it was found that the eighth when handled gave him more pain, and of a kind exactly corresponding with his neuralgia, than the seventh, though this, too, recalled his neuralgia pain a little higher up. When the posterior columns were touched, he was in immediate pain over his whole lower body, as he said to me the pain shot down to his toes, thus proving what a sensitive tract it is.

The field of spinal surgery includes already, as you are aware, one brilliant achievement by Mr. Victor Horsley in removing a small tumor which had given great neuralgia for three years. Knowing now how safely we may approach and operate on the spinal cord, cases of neuralgia may, under some circumstances, be offered one more chance for succor.

With regard to the technique of operation in these cases I would say that a saw and mallets and chisels make slow work. I have done a good deal of dissecting on the cadaver, and find nothing so effective as rongeurs. One can get a start at the edges and gnaw away the laminæ in a short time. The cutting plier is of use to remove the spines, but the rongeur is the safest and quickest instrument for the laminæ.

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Table of Nerve Distribution, prepared by Dr. Dana.

The distribution shown in the column under "Abbe and Dana" is obtained from two cases operated on by Dr. Abbe, with electrical tests by Dr. Dana.

Nerve.	Motion.					Sensation.
	Fèrè's Table.	Starr's.	Thorburn.	Ferrier and Yeo.	Abbe and Dana.	
Sixth cervical nerve.	.....	Biceps.	Subscapularis.	.....	.....	Outer part of shoulder, arm, and forearm; radial distribution of hand
	.....	Extensor carpi et digitorum	Latissimus dorsi.	ibid.	*Latissimus dorsi.*	
	Deltoid.	.....	.....	.....	*Deltoid.*	
	Teres minor.	.....	.....	.....	.....	
	Teres major.	.....	ibid.	.....	*Teres major.*	
	Pectorales.	ibid.	ibid.	ibid.	*Pectorales.*	
	Serratus magnus.	ibid.	ibid.	.....	.....	
	Flexor carpi et digitorum.	.....	.....	Flexors carpi.	*Supraspinati.*	
	Brachialis anticus.	ibid.	.....	.....	.....	
	Pronators.	ibid.	ibid.	ibid.	*Infraspinati.*	
Seventh cervical nerve.	.....	Triceps.	ibid.	ibid.	*Rhomboid.*	Radial side of forearm and hand.
	Serratus magnus.	Subscapularis	.....	Subscapular.	.....	
	.....	Teres major.	.....	ibid.	.....	
	Pectorales.	ibid.	.....	.....	*Pectorales.*	
	Latissimus dorsi.	ibid.	.....	ibid.	*Latissimus dorsi.*	
	.....	Pronators.	.....	.....	*Pronators.*	
	Triceps.	ibid.	.....	ibid.	*Triceps.*	
	Extensor carpi et digitorum.	ibid.	Extensors of wrist.	.....	.....	
	Flexor carpi et digitorum.	Flexors carpi.	.....	Flexor carpi et dig. (median nerve.)	.....	
Eighth cervical nerve.	.....	.....	.....	Pronators.	*Pronators.*	Forearm and hand, median and ulnar areas.
	Pectorales.	.....	.....	.....	*Pectorales.*	
	Flexors carpi et digitorum.	ibid.	ibid.	ibid.	*Flexors carpi et dig.?*	
	Extensors carpi et digitorum	.....	.....	.....	.....	
	.....	Intrinsic muscles of hand.	.....	ibid.	*Hand muscles?*	
	.....	.....	.....	.....		
	.....	.....	.....	Triceps.	*Triceps.*	
First dorsal nerve.	Flexors carpi et digitorum.	Extensor of thumb.	.....	Adduction of thumb.	.....	Inner side of forearm and arm.
	.....	Intrinsic hand muscles.	ibid.	ibid.	.....	
	.....	.....	.....	.....	.....	
	Pectorales.	.....	.....	.....	.....	
	Intercosto-humeral.	.....	.....	.....	.....	

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The conclusion drawn from this table would be this: the sixth cervical nerve supplies—Spinati, rhomboid, deltoid in part; teres major, latissimus dorsi; serratus magnus, pectorales, pronators, triceps. The seventh cervical nerve supplies—Pectorales, latissimus dorsi, pronators, triceps, subscapularis. The eighth cervical nerve supplies—Pectorales, pronators, triceps, extensors carp. et dig. The first dorsal nerve supplies—Thumb, flexors carp. et dig., intrinsic muscles of hand.

XIX. A Contribution to the Surgery of Cerebral Tumors.

By LEWIS S. PILCHER, M.D.,
BROOKLYN, N. Y.

A. P., a robust, finely formed man, thirty-three years of age, was referred to me for surgical treatment in October, 1888, by his physician, Dr. Charles Corey, in consequence of mental and convulsive symptoms, which had gradually developed after a blow on the head, for which reason it was hoped that operative interference might be successful in relieving them. The history, as then ascertained, was as follows:

In the spring of 1882 he was thrown from a carriage, and struck his head on a curbstone. There is no record of the immediate effects of the injury, but he certainly had no paralysis following it. In the year following he was noticed to have become more irritable, childish, and apathetic in character, quite in contrast to his condition before the injury. In the fall of 1884, about two and a half years after the injury, he first had a convulsion. This was general in character. His brother says that he fell down stairs with it. Became unconscious and "blind."

He had several of these at intervals of about a month, with frequent intermediate attacks of *petit mal*. This continued for about a year, when he took a patent epilepsy cure, and remained free from convulsions until June, 1888. He continued to have, however, at rare intervals, the *petit mal* attacks, in which he became more or less unconscious or dizzy, with staring eyes, but no convulsive movements.

In June, 1888, he had another severe convulsion, with loss of consciousness for half an hour or more. Since then he has had no severe attacks, but has had abortive or mixed attacks very often, sometimes several daily. He has also suffered from attacks of severe frontal and vertical headaches, but without nausea or vomiting. He has become very apathetic, never volunteers to speak, and only answers in the briefest way. He will sit quietly in a chair nearly all the time. He does not get maniacal, or show delusions. His sleep is disturbed (by headaches and the attacks?). His appetite is fair, and his bowels very constipated. His bodily functions are

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performed as are those of an infant, without regard to surroundings, and without attempts at cleanliness.

October 13, 1888. An ophthalmoscopic examination was made by Dr. Arthur Mathewson, who reported vision of about $\frac{20}{200}$, with very much swollen condition of both optic nerves—"choked disks." Upon these appearances Dr. M. expressed the opinion that some coarse intracranial lesion, probably tumor, was present, but expressed no opinion as to localization.

16th. An examination was made by Professor C. L. Dana, who reported as follows: The patient is strongly built, walks rather slowly, and with a limp, or sign of stiffness on the right side. He answers questions sometimes correctly and sometimes not. Often he seems unable to understand the simplest directions. His face shows no paresis. The tongue is protruded straight. The arms are weak; right hand 35, left 30; a slight tremor shows in each equally. The tremor increases on volitional movement. The reflexes are a little exaggerated, but there is no incoördination. The legs show also slightly exaggerated reflexes, but no ankle clonus. The right knee-jerk is somewhat greater than the left. There is no evidence of ataxia, but on making him walk with closed eyes, he tends toward the left. The lower limbs are fairly strong, and the patient can walk at least half a mile. The patient's hebetude is so great that it is impossible to be certain whether there is any tactile or pathic anæsthesia; if present, it is slight.

There is some unequal innervation of the eye muscles. The patient occasionally looked cross-eyed to the right. Special tests failed to find any special paresis. Pupils equal, responding to light and accommodation. Impossible to tell positively whether there is any hemianopsia, or restricted visual field; probably not. The sense of hearing is good in each ear.

The patient, though he spoke little, did not seem to have the true aphasic disturbances. The record would be as follows: Aphemia, none; agraphia, present—he could not write, but probably from his utter imbecility; word-blindness, his difficulty in reading ought to be due chiefly to visual defect; word-deafness not present as a rule, though at times he did not seem to comprehend the simplest questions or directions.

The patient, while seated, would be constantly yawning or stretching. He had the peculiar physiognomy of cases of intracranial tumor. Examination of the head showed an old scar just below the left parietal bone. This would place it over the angular gyrus or adjacent part of the posterior temporal lobe.

One of the abortive convulsive attacks came on in the consulting-room of Professor Dana. The patient uttered no cry, and made no decisive movement. The pupils dilated; the head and eyes turned to the left; the right leg straightened, the right hand closed, and the forearm flexed. These movements were not clonic, or even strongly tonic. The fingers could be unbent, and the arm straightened. The patient was not, strictly speaking, conscious, yet he responded to questions slightly. The movements would last a minute, then change, the patient moving restlessly in the chair. The face was not changed in color. After about ten minutes the attack ceased,

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the patient stood up, and said he felt all right. He did not remember what had occurred.

Upon the recommendation of Professor Dana, the patient was given potassium iodide, beginning with fifteen grains three times daily, and increasing five grains daily until a maximum dose of one drachm three times daily was reached. This treatment was maintained for fifteen days, without effect, other than an aggravation of all his symptoms. Medicinal treatment was, therefore, suspended, and the patient was admitted into the Methodist Episcopal Hospital, November 5th, for further observation, and operation if it should be deemed best.

November 7. An extended examination was made by Dr. W. W. Browning, with results merely corroborating those already reported by Professor Dana.

A positive opinion was expressed by both these neurological experts that a tumor of the brain existed in this case. Its localization, however, could not be definitely made from the symptoms presented. These symptoms, also, they were of opinion, were not inconsistent with the existence of a tumor in the angular gyrus, or its immediate vicinity, being the site where previous injury was known to have been sustained. In view of the hopeless condition of the man, and the positiveness of the diagnosis as to the character of the disease, an exploratory operation at the point of injury was both deemed justifiable and recommended.

During the few days that intervened between the reception of the patient in the hospital and the operation that was done upon him, no special change in his condition was noted. He slept and ate well; he lay or sat apathetically wherever he was placed; he was tractable; he urinated and defecated in bed, or wherever he might be when the desire came upon him; the convulsive seizures were frequent. Notwithstanding the indefiniteness of the localizing symptoms, I determined to submit him to operation, choosing the site of the known external injury for the attack, for the following reasons: 1. Injuries of the skull are a recognized cause of the development of diseased growths in the brain. 2. The location of such tumors usually corresponds to the site of the previous skull injury. 3. The patient, except as regards his animal functions, was already practically dead, and the hopelessness of the prognosis made justifiable the assumption of extreme risks, provided they were attended with the slightest possibility of advantage to him. Accordingly, November 9, 1888, I proceeded to operate as follows: In the operation I was assisted by Dr. J. B. Bogart and the house staff of the hospital, there being present also many of my colleagues of the hospital staff and also Drs. Corey, Dana, Shaw, and Browning, who were interested in the neurological aspects of the case. The patient's scalp had been shaven two days previously, and thoroughly scrubbed and disinfected. The following antiseptic precautions were adopted: All instruments boiled. Absorbent dressing materials boiled. Usual antiseptic precautions to the field of operation and to the hands of the operators.

A curved incision was made, convexity upward, beginning at the mid-temporal region; it was carried upward and backward to within an inch and three-quarters of the sagittal suture, then downward and backward so as

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to make a flap four inches at its base and four inches from above downward, at the centre of which was the scar of injury. Hemorrhage was controlled at the edges of the flap by pressure forceps; from scalp edges by rapidly applied sutures, forming temporary mass ligatures. The periosteum was included in the flap, which was then reflected downward, exposing the denuded cranial wall. A one-inch trephine was applied to the parietal bone at the point which lay under the scalp cicatrix, which point had been marked by punctures with a drill previous to the reflection of the flap. The cranial vault presented no depression, nor other sign of previous injury. The first button of bone having been removed, a second similar one was removed behind it and on the same level with it. The opening thus made was further enlarged by the removal of a three-quarter inch button of bone above and below the points of intersection of the two first trephine openings. Projecting angles were removed with a rongeur so as to convert the whole opening into an oval opening with smooth edges. The buttons and bone fragments as removed were placed in recently boiled distilled water, the receptacle containing which was kept in a warm water bath. The dura mater thus exposed was normal in appearance, projected into the opening, tense, and without pulsation. It was divided throughout the lower three-fourths of the circumference of the opening, and the flap reflected upward, the section being made three-sixteenths of an inch from the edge of the opening in the bone. Immediately on the reflection of this flap the brain substance projected strongly through the opening with such force as to tear the cortical portion at the anterior margin of the opening, making a rent a quarter of an inch deep. The tissue presenting being normal, and the intracranial pressure evidently being in front of the point of opening in the cranial wall, the opening was enlarged toward the front by the removal of another inch button, and by the rounding off of the corners by the rongeur as before. The dura was reflected as before. There was now an opening through the cranial wall oval in shape, three inches in its antero-posterior diameter by two and a half from above downward. Through this the brain tissue projected, forming a tumor the size of half an egg, without pulsation, normal in appearance. Palpation elicited no evidence of deep-seated induration. Careful separation in the line of the sulci was negative in its results. With the advice of the neurological experts present a delicate exploring trocar and needle was passed into the brain tissue in various directions. The furthest excursion of the needle being, posteriorly two and a half inches, and anteriorly three and a half inches. The result of these explorations was negative. As the needle was passed anteriorly to a depth of about two inches, a sense of slight elastic resistance was perceived, which was overcome with slight pressure, after which the needle passed on as before. This elastic resistance was due, as was afterward plainly demonstrated, to the pia mater covering in the surface of the convolutions in the fissure of Sylvius, which was transfixed by the needle. It being now abundantly demonstrated that there was no tumor in the region of the brain accessible from the point of operation, further attempts at exploration were suspended.

The projecting cerebral mass was so great in volume and so tense, that there was no possibility of returning it within the cranial cavity, nor of

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covering it by the dural flaps. Accordingly, after due consultation with colleagues present, it was sliced off down to the level of the bone. Slight hemorrhage from minute arterioles in the pia was arrested by delicate catgut ligatures, the adjustment of which was attended with much difficulty owing to the delicate and fragile nature of the tissues. It was finally, however, satisfactorily done. The flaps of dura were now brought down into place and secured by catgut sutures to the cut edge of the peripheral dura. A gap between the flaps was left amounting to about one-fourth of the opening. Upon the surface of the dura, the parts having been thoroughly cleansed by irrigations of warm distilled water, were now placed four of the buttons of bone, two large and two small, which had been kept warm and sterile up to this moment. Two fine rubber drains were placed so as to reach from the interval between the dural flaps to the lower posterior angle of the scalp wound.

The pressure forceps were now, one by one, removed from the scalp flap, any vessels still requiring ligature were secured, and the flap laid up in place and secured by sutures throughout its whole extent, except at the point of emergence of the drainage tubes. The parts were enveloped in a mass of gauze, which had been sterilized by boiling. The entire time occupied by the operation was two hours and a half. At the close of the operation, the patient exhibited considerable shock; pulse 152. Under the use of digitalis and alcohol and external heat he rallied slowly. As the effects of the anæsthetic passed off, paralysis of the right arm and leg was noticeable.

7.30 P.M. Pulse 123; ordered enemata of beef peptonoids.

11.25 P.M. Temperature 100.6°; pulse 120.

10*th*. 8 A.M. Lies in a quiet stupor; when spoken to sharply, appears to recognize what is said. Takes nourishment by the mouth and retains it.

2 P.M. Begins to rub abdomen as if in pain. During the remainder of the afternoon was quite restless. At midnight pulse has risen to 160.

11*th*. 1 A.M. Breathes heavily; hand wanders constantly to head.

2.30 A.M. Unable to swallow.

3 A.M. Great dyspnœa has developed; beginning œdema pulmonum; dry cups over chest. The œdema of lung progressed in intensity and extent; pulse weak and 160.

7.30 A.M. Death by respiratory failure, thirty-eight hours after conclusion of operation.

Autopsy.—Five hours after death. Report of Dr. Hodenpyl, the pathologist of the hospital. Rigor mortis only slightly developed. Body well nourished; brain only examined. Dressings when removed found to be stained with reddish serum, no pus about the wound, which was healing by first intention. There is a slightly elevated, semifluctuating tumor at the point of operation, pressure upon which causes disintegrated brain tissue to issue from the drainage tube at the bottom of the wound. There is an incised wound, nine and a half inches long, closed by sutures beginning one inch in front and one inch above the left auricle, and passing upward and backward in a curved direction to within one and three-fourths inches of the sagittal suture, and thence downward to its point of termination four inches

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behind the auricle. At the anterior superior angle of the wound a button of bone is found adherent to the dura mater. Three other buttons are found lying upon the dura, non-adherent. Upon the removal of the calvarium, the dura mater appears normal, except for a moderate venous congestion. In the left occipito-temporal region, about two and a half inches from the median line, is an opening in the dura, two and three-fourths by three inches, partially covered by two flaps of dura mater. In the interval between these flaps there protrudes a considerable mass of softened brain tissue. The weight of the brain is fifteen hundred and seventy grammes, not including that lost during the operation. There is a moderate congestion of the dura mater on the right side. The convolutions over the anterior half of the left hemisphere are greatly flattened, and this portion of the brain is occupied by a non-encapsulated translucent mass, the outer portion of which is somewhat denser than the surrounding brain tissue, but its centre is softened and practically broken down. In the occipital lobe is a large, softened, and disintegrated area beneath the site of the operation. The subarachnoid space at the base contains a fresh clot which extends up into the Sylvian fissure on the left side, the pia mater of which region presents considerable diffused ecchymosis. The antero-posterior diameter of the left hemisphere is eight and three-quarters inches; of the right, eight and a quarter inches. The width of the left hemisphere is, at widest part, three and a quarter inches; of right hemisphere, two inches. The following surface measurements were made on the fresh brain: 1st. Distance of the posterior border of the tumor from intersection of the fissure of Rolando with mesial surface, along line of junction of mesial and lateral surfaces, is one and three-quarters inches. 2d. One inch from central fissure and parallel to above line, three inches. 3d. From a point on the fissure of Rolando two and a half inches from its superior extremity, two and a quarter inches. 4th. From the junction of the two arms on the Sylvian fissure, four inches. The third frontal convolution (left) which abuts against the fissure of the island of Reil is softened. The roof of the left lateral ventricle is wider at its anterior half than that of the other side, and is bulged inward over the base of the tumor, which extends to within one-half an inch of the ependyma. The caudate nucleus is flattened on the left side—*i. e.*, one-eighth of an inch from the roof of the ventricle to the internal capsule. On the right side one-quarter of an inch.

Microscopical examination.—The softer portions of the tumor, composing about two-thirds of its bulk, are made up of nucleated branching cells, closely packed together, with but scanty connective-tissue stroma. Many of the cells freshly teased have from ten to twenty or more prolongations, often of very considerable length. The tumor seems to be poorly supplied with bloodvessels; the denser portion is made up of brain tissue infiltrated with spider-cells. This infiltration of the brain tissue with tumor cells involves a considerable area, but the infiltration is probably not sufficiently dense to abolish entirely the functions of the parts involved. The nature of the growth is therefore gliomatous. Sections made from that portion of the brain removed at the operation show laceration and bloody infiltration, but no structural lesions. Sections from the necrotic portion removed post-

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mortem show superficial softening consisting of fatty and granular changes in the cells and a deeper infiltration of the tissue with blood-cells. The vessels of the pia mater are distended with blood, and here and there are extravasations of blood in the meshes of the pia. The first temporal and third frontal convolutions show no lesions. The convolutions of the island of Reil of the left show more extravasations of blood. The caudate nucleus of the left side, although somewhat flattened, has essentially the same appearance as the right. The pineal gland contains a considerable number of corpora amylacea.

XX. Inferior Dental Neurectomy.

By J. H. GLASS, M.D.,
UTICA, N. Y.

In an examination of the literature on the subject at my command I find no mention of the operation of excision of the inferior branch of the fifth nerve, excepting that which contemplates the opening of the inferior dental canal through the ramus of the jaw externally. This operation necessitates the division of some or all fibres of the masseter muscle, the repair of which may not always be rapid and complete, owing to its almost constant semi-involuntary motion. If absolute rest is enjoined—an essential to prompt and perfect repair—much discomfort must obtain from masticatory disability. As to cosmetic effect, the operation is not a promising one, as a more or less ugly superficial cicatrix is inevitable and the facial contour is frequently disturbed following imperfect union of muscular fibres, or contractions incident to granular repair or pus accumulation.

In consideration of these objections I desire to suggest an operation which I believe is not open to these criticisms, or to others of equal importance, although my experience with the operation on the living subject is limited to the single case which is described. Anatomically I have, in several instances, demonstrated the practicability of the operation on the cadaver, and can see no valid reason why its employment, as a substitute for the operation usually described by our text-books, should not become general.

Case.—Two years since T. W., at the instance of his family physician, consulted me for relief from a persistent neuralgia of the inferior branch of the fifth nerve of several years' duration. The patient, a German of about fifty-five years of age, was an apparently resolute and courageous individual,

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of a naturally strong physique, but at this time was wasted and depressed from his prolonged and almost uninterrupted pain; signified his willingness to submit to any operation however severe, and abide any result of whatever nature provided he could obtain relief from his intolerable suffering. He declared, with an earnestness that impressed one with his sincerity of purpose, that unless we did succeed his only alternative was speedy self-destruction.

The patient declining any but a local anæsthetic, although admonished of the painful character of the nerve section, a few minims of a four per cent. solution of cocaine were deeply injected in the region of the dental foramen. The jaws were widely separated and held in position by an ordinary dental post placed on the side opposite to that of the proposed operation; an assistant steadying the head and controlling the tongue with a depressor when necessary. With the index finger over the spine of the inferior dental foramen, a landmark of the greatest importance in this procedure, an opening was made with Emmet's angular scissors, cutting under the finger five-eighths of an inch in length upward and backward, separating the soft parts down to and about the nerve trunk which lies in front of the artery at this point. Hugging the greatest concavity of the notch just above the spine, a Theobald's strabismus hook was passed under the nerve, which, isolated from the artery, was seized with Wecker's clamp strabismus hook. The nerve firmly held, a hook bistoury was passed, the back of the instrument pushing the soft parts up as high as possible, the cutting edge was turned and the upper section made by a to-and-fro motion of the knife; with the trunk of the nerve still held in the clamp it was drawn up as much as possible, and the lower section made in the same manner, completing the neurectomy. Substantially, the steps were the same in the experimental operations on the cadaver.

In the case detailed five-sixteenths of an inch of the nerve trunk was removed, which seems to have been ample, as he has had no recurrence of his neuralgic symptoms up to the present time. It should be remembered that all nerve regeneration takes place from the central end of the nerve, and that the relief promised is in constant relation to the more nearly approximate central section of the nerve. The danger of wounding important vessels must not be ignored, yet I believe little risk is entailed if we bear in mind the relation of the internal maxillary artery, which, near the point involved, skirts the inferior margin of the internal pterygoid muscle.

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XXI. The Efficacy of the Older Methods of Treating Nasal Disease Contrasted with those of To-day.

By CLARENCE C. RICE, M.D.,
NEW YORK.

It is of historical interest only to look back twenty years and examine the therapeutic measures then employed in the treatment of nasal disease. A review of the scientific study of diseases of the upper air-passages carries us back only about thirty years—for the laryngeal mirror and suitable apparatus for illuminating the larynx and nasal cavities came into use no further back than 1858. We can obtain for our present purpose sufficiently striking comparisons by reviewing the therapeutic measures which have been employed during the past ten years.

Prior to 1860 it is the old story of earnest and diligent workers endeavoring to obtain correct ideas of the pathology and etiology of diseases, the physical appearances of which they could not see, and trying to treat mucous surfaces which were inaccessible by reason of lack of proper methods of examination. The progress made in the treatment of nasal disease during the period from 1860 to 1875 seems to us, as we look back, far less rapid and satisfactory than it has been during the past ten years. But this time was not wasted. It requires ten years in any special line of medical investigation to perfect instruments for thorough physical diagnosis and to become expert in their use. Ten years are easily spent in investigating the action of drugs when applied to mucous membranes, in discarding the worthless ones from our materia medica, and in retaining perhaps the only one of many which has not proved disappointing in its action.

In the period from 1870 to 1880, which may be properly designated *the period of topical medication* by means of douche, sprays, brush, and applicators, the disease commonly known as chronic nasal catarrh largely engrossed the attention of rhinologists. The pathology and etiology of catarrhal inflammation of the nasal mucous membrane were accepted without question to be identical with those of all other mucous surfaces of the body. Nasal catarrh seemed to be a disorder the principal phenomena of which were swelling

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and hypersecretion; and it was the chief aim of the operator to check this apparent increase in the mucous discharge by the same methods as had always been employed in controlling hypersecretion of other mucous surfaces: and astringents vegetable and mineral were applied in all varieties of ways to the nasal surface, first with probang and brush. That the troublesome symptom hypersecretion, was not remedied by these measures seemed to be readily explained by the fact that the astringent drugs thus applied only came in contact with the lower chambers of the nose, while the upper portions, being inaccessible, were unsatisfactorily treated. It was felt that a long step was made forward when the air-pump, air receiver, and atomizing tubes were at last perfected, and all portions of the nasal and pharyngeal mucous membrane, even the most remote, could be medicated by their use.

It required ten years to demonstrate that these phenomena of catarrhal inflammation of the nose, swelling and hypersecretion, could not be controlled by astringent drugs in weak solution applied by brush or spray. Every rhinologist will remember the repeated and discouraging failures which forced him to the conclusion that he must pin his faith on therapeutic measures other than the spray and douche if he would cure his patients who were suffering from chronic nasal disease; and, by the way, that word *cure* was handled very guardedly by the nasal physician in those days. It was the patient who introduced it into the conversation. To-day we are not obliged to run away from this word.

Another of the fundamental fallacies which wasted the valuable time of the physician who treated diseases of the upper air-passages between the years 1860 and 1870, was that he considered the larynx clinically the most important part of the respiratory tract. Diseases here were carefully studied and treated, while nasal disorders were ignored. It seemed to be felt that the small length of the air-tube called the larynx was separated pathologically from every other portion of the respiratory tract. It is now known that laryngeal catarrhal inflammation is almost always secondary to and dependent upon the same character of inflammation of the nose, and no matter how frequently and to how great an extent laryngeal catarrh is benefited by topical applications, relapses will always speedily occur until that great source and cause of inflammation of the upper air-passages—*nasal disease*—is controlled. Ten years ago there were many laryngologists, and they worked at the wrong end of the

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upper respiratory tract. To-day there are numerous rhinologists, because it has been demonstrated beyond peradventure that catarrhal inflammation commences in the nose and extends downward.

The real and remarkable progress in the treatment of nasal disease during the past eight years has been attained because we have at last appreciated: 1st. That the anatomical structure of the nasal tissues is a peculiar one, differing in a marked way from other mucous surfaces and consequently demanding different treatment. 2d. That this peculiar structure performs a remarkable physiological function; and 3d. That the disease which was formerly known as chronic nasal catarrh, and now more frequently called chronic hypertrophic rhinitis, is not satisfactorily explained by the pathology which our writers attribute to catarrhal inflammation of ordinary mucous membranes.

Let us review this ground for a moment. First, we have said that the older methods of treating nasal disease—methods which were composed mainly of the application of astringent drugs to an over-secreting mucous membrane, were ineffectual because the physician failed to recognize the peculiar anatomical structure of the nasal tissue and its remarkable physiological function. In examining the nostrils of patients suffering from the most common variety of nasal disease, observers were always impressed with three pathological conditions: 1st. The occlusion of the nasal cavities by swelling of the nasal tissues. 2d. The heightened color of the mucous membrane; and 3d. The presence of hypersecretion. The indications for treatment seemed clear: to control all of these symptoms by the application of astringent remedies. But it was found that so-called astringents seemed to be stimulating or irritating in their effect, for all three of the pathological conditions were increased rather than diminished by such treatment. This failure seems to me to be satisfactorily explained by this one fact, viz.: that nasal operators were dealing with an erectile structure and not a simple mucous and submucous tissue, *endeavoring to astringe the physiological erectility of a cavernous body* with weak sprays of silver, copper, tannic acid, and zinc. We can understand now that these daily applications were just the peripheral stimulation needed to produce a constant erection of these bodies, and that when they were persisted in for some time the continued erection of the nasal tissues was at length followed by paralysis of the overtaxed vaso-motor system which regulates the quantity of blood flowing to the nasal

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turbinates. The result was a more or less permanent occlusion of the nostrils by swellings composed not so much of hypertrophied tissues the result of a chronic rhinitis, but composed of the dilated venous sinuses of a cavernous body whose power of erectility and contraction had been abolished by the application of irritating drugs. Every application of cocaine to these nasal swellings demonstrates that they are only to a slight degree made up of hypertrophied connective tissue, since they are entirely effaced—completely levelled to the plane of the normal neighboring tissues—by the action of this drug.

It will be seen, therefore, that the name "hypertrophic rhinitis" is very frequently misapplied. Not only is it not a hypertrophic process which characterizes this disease, but the significance of the term rhinitis, as indicating an active inflammatory process, is also very frequently misleading, since the swelling of the soft tissues seen in chronic nasal disease is composed of bloodvessels permanently dilated by over-physiological action or by external irritants.

We have said that permanent dilatation of the bloodvessels which form the cavernous turbinated bodies may come about by reason of over-physiological action. This is a point worth considering. As long ago as 1769, Morgagni called attention to the "red thickness of the membrane of the nose," but seems not to have appreciated that this was an erectile structure. And Toynbee,[1] writing in 1868, says: "Many years ago I pointed out the peculiar erectile tissue of the nasal mucous membrane—this tissue is a most efficient respirator." In 1853 Kohlrausch demonstrated what he called a "cavernous network of veins" by injecting the submucous nasal structure through the jugular vein. Hyrtl and Kölliker made similar experiments and arrived at the same conclusions as to the presence of this true nasal erectile structure. But to Dr. H. J. Bigelow, of Boston, the credit is due of describing, in the year 1875, this erectile structure in detail, and he called attention also to the alternate swelling and contraction of this structure, naming it the "turbinated corpora-cavernosa." Bigelow obtained his results by injecting the nasal structure locally. We have therefore in the respiratory portion of the nose, especially abundant over the inferior turbinated bone, a true membrana mucosa in the meshes of which is formed an erectile tissue.

[1] Toynbee: Diseases of the Ear, p. 200. London, 1868.

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That so unusual a structure as erectile tissue was placed in the nose for a distinct purpose no one can doubt. We believe that the expansion and contraction of this nasal tissue are not due to inflammatory congestion, but are physiological acts, which are regulated by a finely adjusted nervous mechanism as sensitive as that which presides over the movement of the iris. Since it has been known that inspired air is elevated in temperature to the proper degree for its reception into the lungs by warmth obtained almost entirely from the nasal tissues, and from this same source alone the inspired air receives the necessary amount of moisture, it is more than probable that the nasal erectile tissue changes in size constantly with every variation of the thermometric and barometric scale.

I would refer here to the experiments done by Aschenbrandt,[1] which I have not time to quote, and also to an article by Greville Macdonald,[2] M.D. Both of these gentlemen have demonstrated, by an arrangement of tubes which allowed the air to pass into one nostril and out the other, that air inhaled at 53.6° F., and also at 46.4°, was exhaled from the opposite side of the nose (without having passed to the lungs) at a uniform temperature of 86°. And it was also demonstrated that air became charged with water to the point of saturation by its passage through the nostrils. Keeping in mind these important physiological functions performed by the nasal tissue, the necessity for perfect nasal respiration and the evil effects of mouth-breathing will be apparent.

The intense functional activity of the nasal tissues, together with the fact that they are exposed to the irritation of dirt and dust from without and frictional irritation from within, due to contact with projections of bone and cartilage upon the septum; these factors greatly predispose to constant distention of the venous sinuses of the nose and eventual vaso-motor paralysis. We have here, then, the so-called hypertrophies of the most common form of nasal disease, not due properly to a catarrhal inflammation, but to a great extent caused by the functional activity of an erectile structure. This much and more has been learned in regard to nasal anatomy and physiology, and this knowledge will, I believe, substantiate the third proposition of this paper, viz., "That the disease which was formerly known as chronic nasal catarrh, and now more frequently

[1] Aschenbrandt: Ueber die Bedeutung der Nase in der Respiration. Würzburg, 1886.

[2] Macdonald: On the Mechanism of the Nose as regards Respiration, etc. British Med. Journal, December, 1888.

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called chronic hypertrophic rhinitis, is not satisfactorily explained by the pathology which our writers are in the habit of attributing to catarrhal inflammation of ordinary mucous membranes."

To proceed one step further: if the nostrils are partially or wholly occluded by the bagging of the nasal tissues, the remaining pathological appearances and the subjective and objective symptoms of nasal catarrh are satisfactorily explained by the mechanical causes which are incident to nasal obstruction. For example: as to the matter of hypersecretion—which to the patient is the most annoying of all symptoms and is the most obstinate one with which the physician has to contend—*its* presence is also to be explained on other grounds than the result of catarrhal inflammation. This apparent hypersecretion may manifest itself in two ways: first, there may be simply an outpouring of serum from the over-distended vessels of the erectile structure as seen in the periodical exacerbations of the disorder called hay-fever, and in many cases of very sensitive and irritable nostrils. And, secondly, it may be said that the collections of mucus and muco-pus which are blown from the nose and hawked down from the post-nasal space, although apparently much greater in quantity than the normal mucous secretions, in many instances do not represent an increased glandular secretion, but rather a stasis of the normal flow. Stasis of the nasal secretion takes place, first, because the air current is too feeble in a partially occluded nostril to waft it on; and, secondly, because the action of the ciliated epithelium is also abolished in an obstructed nostril. If hypersecretion can be explained in this manner, it is another strong argument against the name rhinitis or any word ending in *itis*.

It is not within the province of this paper to speak of the intimate relation which careful study during the past five years has discovered to exist between nasal disease and many reflex phenomena such as bronchial-asthma and the asthma associated with hay-fever. We can only mention in passing, nasal coughs, the hemicrania, migraine, and the various neuralgias due to nasal irritation, the direct and reflex aural phenomena cured by relieving nasal irritability, the close relation between nasal congestion and that of the conjunctiva; and it may come to pass that the rhinologist, as well as the oculist, will claim his share of the work in the treatment of epilepsy and chorea by demonstrating nervous relationship between these diseases and disorders of the nasal chambers.

As we have already said, it has been positively demonstrated that

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laryngeal and bronchial inflammations are secondary in the majority of instances to nasal disturbances: 1st, by the extension downward of the process; 2d, by the abolition of the nasal function; and 3d, by reflex causes. The surgical apparatus and therapeutic measures which the rhinologist possesses to-day are adequate to correct the pathological conditions present in nasal disease. Cocaine and careful antiseptic precautions permit him to remove whatever may seriously obstruct nasal respiration and function whether it be soft tissue, cartilage, bone or tumor, without pain or constitutional disturbance to the patient. The perfected atomizers still have their use in properly cleansing the mucous membrane before the essential treatment is commenced. The storage battery which furnishes the electric light for illumination, the galvano-cautery for removing soft swellings and also the motive powel to propel the trephine, the saw and the drill, are invaluable additions to the nasal operator's equipment. While it is necessary to remove enough of soft or hard obstruction to secure free nasal respiration, *it is imperative to leave uninjured sufficient soft nasal structure to perform perfectly nasal function.* Too much emphasis cannot be placed upon this caution.

We have in considering the peculiar anatomy and physiology of the nose, and the more recent pathology of nasal catarrh, apparently been led somewhat away from the line of thought the title of this paper would naturally suggest. But it was not intended to enter into the details of therapeutics, but rather to endeavor to formulate the broad principles upon which the present very efficacious methods of treating nasal disease are based. The indications for treatment are clear. First. To secure free nasal respiration and so obtain normal nasal function. Second. To prevent the collection and inspissation of nasal secretions by insisting upon healthy nasal drainage. Third. To abolish over-sensitive areas in the nasal chambers which have been found to occasion near and remote reflex disorders. Fourth. To do away with the frictional irritation arising from contact of the distended turbinated bodies either with a deviated nasal septum itself or the convexities of bone and cartilage projecting from the nasal septum.

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XXII. Membranous Rhinitis.

By FRANK HAMILTON POTTER, M.D.,
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By the term membranous rhinitis is meant an acute inflammation of the nasal passages in which the exudation forms a membrane covering partly or entirely the inflamed surfaces. This is the most prominent characteristic but it differs in many other respects, as to its course, susceptibility to treatment, etc., from the acute inflammation ordinarily seen in these parts. According to my observation it occurs in about two per cent. of all cases of acute rhinitis.

These cases were in healthy subjects, free from any hereditary or acquired disease. There was absence of any history of syphilis, rheumatism, or scrofula. One patient had had scarlet fever during childhood which had left its mark upon the upper air-passages. In this case there was partial destruction of the membrana tympani in the right ear, and the entire upper air-tract was sensitive to changes in temperature. The personal history of the other cases was negative.

These attacks of membranous rhinitis were not associated in any case with any of the infectious diseases. In fact, with the single exception already mentioned there was nothing to suggest a theory to account for the peculiar nature of the nasal inflammation; none of the patients had had diphtheria, and there was nothing to indicate its presence either during the attacks or afterward. One of these cases occurred in a member of my household, and therefore presented an excellent opportunity for observation as to its course and to the effect of remedies upon it.

The history of these cases is as follows: The attack begins like an ordinary acute rhinitis, excepting that the symptoms seem to be intensified. There is dryness and fulness of the nostrils accompanied by a most disagreeable sensation of "tickling." This is persistent and prompts the continual blowing of the nose, which, however, is entirely ineffectual. After the first day the dry stage is followed by the stage of dilatation. There is a free discharge, watery at first, afterward becoming denser but never muco-purulent. The

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systemic disturbances are not severe. We have headache at times, not in all cases nor continually in the same case. There is frequently some constipation, easily relieved however. There is hardly a perceptible change in the temperature. The appetite is good, sleep somewhat disturbed, but not to a degree requiring treatment. The symptoms are for the most part local, and they are annoying both from their intensity and their duration. Without examination of the nostrils there would be little to indicate that you had to deal with anything but an ordinary acute inflammation which was more persistent than usual. This examination, however, reveals an interesting condition. By the third day of the disease it will be observed that the discharges instead of being easily removed cling to the surfaces with great tenacity; they form a white coating over most of the inflamed area—that is, over the turbinated bodies and over the septum. This coating cannot be either washed away or wiped away with absorbent cotton. Points may be torn off with small forceps, but the membrane soon reforms. When you have succeeded in removing some of the membrane in this way the denuded surfaces present bleeding points, and are very tender. In spite of treatment, as will be seen, this condition lasts during the course of the disease.

In some respects this membrane is similar to that formed in diphtheria. It is dead white and opaque; it is firmly attached to the parts beneath; it is only detached with violence, leaving a bleeding surface. Another interesting distinction between this and the ordinary inflammation is the refusal of the tissues to respond to the contractile power of cocaine. The engorgement of the parts persists even under strong solutions, and this, of course, adds to the distress of the patient. This cannot be due entirely to the fact that the membrane prevents contact of the cocaine with the tissues, because it was observed in the first few days of the disease before the membrane had formed. It seems to be one of the essential qualities of this form of nasal inflammation and may be used as one of the diagnostic points.

The duration of the disease, notwithstanding the most energetic treatment both constitutional and local, was about three weeks. This is very different from the course of the usual acute rhinitis. Most cases of the latter can be limited by the modern treatment to hardly more than as many days. We are accustomed to assure our patients that if they will follow our directions their colds need not

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last more than three or four days, and this statement is, as a rule, justified. It is, however, necessary to be more guarded in an assertion of this kind, as is indicated by the study of the disease under consideration.

The treatment consisted in both constitutional and local measures. The first began with a hot bath at night and the exhibition of $\frac{1}{100}$ gr. of sulphate of atropia. The atropia was continued for a few days in doses of $\frac{1}{200}$ gr. every eight hours. Its effects were apparent in the pharynx, but it did not control the nasal symptoms, and the salicylate of soda was substituted in doses of 5 grs., three times a day. This was used on the supposition of a rheumatic element in the case. It was, however, soon abandoned, as it seemed to cause a distressing headache, not present before and not present after the drug was stopped. The bicarbonate of soda was then tried with negative results and, finally, the bromide of potash in 20 gr. doses four times in the twenty-four hours. The latter seemed to have a good effect, the unpleasant sensations resulting from the long-continued and persistent stenosis of the nasal passages were modified. It must not be supposed that no attempt was made to control the stenosis by local means. Cocaine was used from the first in the strength of from 4 to 20 per cent. It had the result of benumbing the parts and giving relief in that way, but no contractile effect could be observed. There seemed present an œdema of the tissues that prevented them responding to its influence. The combination of antipyrine and cocaine, as suggested by Dr. F. W. Hinkel,[1] of Buffalo, was then tried, but without result. I then began systematically to tampon the nose with absorbent cotton and this gave partial relief. Cocaine was first applied and then the cotton was introduced, dry as a rule, though occasionally it was dipped in the cocaine solution before using. The dry cotton appeared to give the best result. It absorbed what moisture there was and made pressure upon the œdematous tissues, and in this way relieved the stenosis temporarily. Often a series of cotton pellets was introduced one after another, each being left *in situ* for five minutes or more, and this plan seemed to work very well.

In one case menthol was used dissolved in oil in the strength of one per cent., and the cool feeling it produced was very agreeable to the patient. It was, therefore, used occasionally. As the disease

[1] New York Medical Journal, October 20, 1888.

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gradually subsided the cocaine recovered its contractile powers and then, of course, restoration of the healthy state of the parts was hastened.

In one case a curious phenomena was observed. The disease seemed to expend itself upon the left nostril in great part, the right nostril showing but slight disturbances. In the left nostril all the symptoms that have been described were present. The membrane was well formed and covered the entire surface of the septum and of the turbinated bodies as far as could be observed. The stenosis was very persistent, and after continued tamponing would return in a short while. In the right nostril the membrane formed only in points here and there, the stenosis was easily relieved, and in every way the inflammation was less severe. In this case the disease recurred after several months, and in this second attack the left nostril seemed more affected than the right, though the contrast was not nearly so well marked as in the first attack.

I cannot say that the treatment controlled the course of the disease or shortened it in any way, though, of course, it added to the comfort of the patients. It is possible, however, as has been observed, that in the last days as the disease was disappearing it had something to do with hastening recovery.

There is very little reference in literature to cases of this kind. Dr. William A. Hammond in an article on "Coca—Its Preparations and their Therapeutical Qualities, with some Remarks on the so-called Cocaine Habit," in the *Virginia Medical Monthly* for November, 1887, reports an attack of rhinitis in himself that presented many of the characteristics found in the cases described in this paper. He says the membrane in his case was not unlike that formed in diphtheria, but was very loosely attached to the tissues beneath. In this latter respect it differed from my cases, but in other ways they agree so well as to lead me to think it was the same disease. In his case, as in those upon which the paper is founded, there was no tendency in the disease to spread beyond the nasal passages. It was limited entirely to the nose; the pharynx even could not be said to show any evidence of disturbance.

In conclusion, one or two suggestions are offered for consideration. The drift of opinion to-day is toward a broader conception of the nature of disease. It is expressed in this instance by most observers holding that all inflammations of the air-passages associated with the formation of a false membrane are related, and

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this relation is indicated by saying they are expressions of the diphtheritic poison. Ought not this opinion to be modified by saying that the great *majority* of these cases are so related? Is this rule quite so universal as is usually held? If we can have an inflammation of the nose characterized by the formation of a false membrane in which no trace of the diphtheritic poison can be discovered, cannot the same kind of an inflammation appear in the larynx or the pharynx? Can it not also occur in the bronchial tubes and produce there a croupous bronchitis?

In view of any criticism of the accuracy of observation concerning these cases of membranous rhinitis, it is proper to state that I have always followed the opinions of Dr. Jacobi and Sir Morell Mackenzie in regard to the unity of the croupous and diphtheritic inflammations, and it was, therefore, with great interest that these cases were studied.

The questions involved in the consideration of the inflammations seen in the air-passages cannot yet be said to be settled. And I trust the cases reported here will add something to the knowledge of the subject and stimulate further inquiry.

DISCUSSION.

Dr. C. C. Rice, of New York: I have been struck with the great confusion in the literature of this subject, which, as Dr. Potter says, is very meagre, between membranous rhinitis and nasal diphtheria, so that the cases of so-called membranous rhinitis in children, as reported, are almost valueless. My experience is not like Dr. Potter's in respect to the frequency of membranous rhinitis. I have seen but two cases during the last five years, one of which was that of Dr. Hammond to which he has referred. The disease is not to be explained as a more intense condition of the common acute coryza. Constitutional tendencies enter into its causation. In both of my cases there was a history of gout and rheumatism; one is subject to hay fever and the nasal mucous membrane is extremely sensitive; he also has deviation of the septum and hypertrophic rhinitis. All of these are etiological factors to be considered.

As to a specific poison, there was but slight constitutional disturbance and in Dr. Hammond's case the condition lasted for four weeks, immense casts composed of organized tissue being blown from the nostrils. Great relief was obtained from a four per cent. solution of cocaine with one grain of morphine to the ounce.

Dr. J. O. Roe, of Rochester: I believe with Mackenzie and many

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others, that all affections characterized by a fibrinous exudate upon the surface, such as membranous rhinitis, croupous tonsillitis, membranous croup, and diphtheria, have a common cause, are alike in nature, are more or less correlated, and are, in fact, one and the same disease, varying in manifestation according to the condition of the patient and the site of the infection or the local manifestation. I believe also with Oertel, Jacobi, and others that they are due to specific germs, the varying degrees of systemic disturbance being due to varying susceptibility or varying virulence of the germs, the exudate appearing at the point of inoculation.

Doubtless in Dr. Potter's cases a mild germ found a place for development in the nasal passages of persons subject to chronic disease of the parts, and there was not sufficient septic absorption to produce much systemic disturbance.

Dr. C. E. De La Vergne, of Brooklyn: Narrated the history of a case in which one of the children in a family of four, all of whom had diphtheria, two of them fatally, had for five weeks a membranous exudate covering the nasal surfaces extending into the pharynx far enough to be seen; this exudate could be detached easily, but re-formed in two days. There was comparatively little constitutional disturbance, and had the case not been associated with other cases of diphtheria it might have been considered one of simple membranous rhinitis.

Dr. O. D. Pomeroy, of New York: There was some time ago an epidemic of diphtheria in the New York Infant Asylum, during the course of which I had seven or eight cases of membranous conjunctivitis; the diphtheritic character of these was doubtful on account of the mildness of all the cases, and aside from the existence of diphtheria in the institution would not have been suspected. Recovery resulted in all of them; in true diphtheritic conjunctivitis the patient generally loses his eyesight. The difference may apparently be one of degree only between mild membranous conjunctivitis and the most destructive type of diphtheritic conjunctivitis.

XXIII. Treatment of Hypertrophies at the Base of the Tongue.

By WENDELL C. PHILLIPS, M.D.,
NEW YORK.

I shall endeavor in this short paper to discuss the treatment of those hypertrophies only that are occasionally found in the space between the circumvallate papillæ and the epiglottis; in other words,

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that fill the glosso-epiglottic fossæ, and present the following real and reflex symptoms, fully described by Gleitzman (*Medical Record*, December 17, 1888), H. Curtis (*Medical Journal*, November 8, 1864), Lennox Brown, Rice, and others: viz., 1, spasmodic cough; 2, interference with phonation or "tired voice;" 3, sensation of foreign body in region of the epiglottis; 4, subacute inflammation with more or less pain; 5, desire to clear the throat; 6, attacks of asthma. This condition has come to be well recognized, and occurring, as it often does, in persons whose voices are their "stock-in-trade," too much attention cannot be given to its successful treatment. And, obviously, any treatment to be successful must aim toward the destruction of the hypertrophic tissue.

No special preparation on the part of the patient is required, except that no operation should be attempted when there is any acute inflammation of the surrounding tissues. In all operations it is the duty of the operator to select methods that will be most effective with the least discomfort and suffering to the patient.

It is certainly essential that these hypertrophies should be effectually destroyed; acting, as they do, as foreign bodies in the throat. For this purpose the following means have been employed with more or less success: Chromic acid, nitric acid, monochloracetic acid, Vienna paste, fused nitrate of silver, Lugol's solution, the galvano-cautery, and the cold wire and cautery snare. Cocaine should always be applied and much care should be used in its application, that it come in contact with those tissues only that are to be destroyed, thus avoiding the unpleasant effects often experienced when it is indiscriminately applied to the throat. This can easily be done by employing an ordinary throat applicator, curved the same as for laryngeal applications, after bringing the growth into view with a laryngeal mirror. A two or three per cent. solution is sufficiently strong to anæsthetize these hypertrophies. They are not highly organized, therefore not excessively sensitive to pain. If nitric, chromic, monochloracetic acid, or Lugol's solution is used, almost any form of applicator may be brought into use, providing it can be curved enough to pass over the tongue and make firm pressure upon the growth. Enough only of the acid should be used on the applicator to cauterize the growth without destroying the adjacent tissues. If this precaution is not taken the pressure made will squeeze out a little too much acid, which will find its way to the surrounding tissues.

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The patient should withdraw the tongue with a napkin, and the application should be made by the aid of the laryngeal mirror, though in some cases the growths may be brought into view by depressing the tongue firmly with a tongue-depressor.

There are two methods of procedure when the galvano-cautery is employed: 1st, by destroying the whole growth from summit to base; 2d, by using a pointed tip and puncturing the growth from the summit into the root. If the first method is followed a flat tip is preferable.

In some cases the growths are very large, and so easy to grasp that they may be removed with a snare. The snare used may be either the cold-wire or the galvano-cautery snare. In either case the small canula should be curved and the removal accomplished as gently as possible. If specimens for microscopical examination are desired, the cold snare should be used. These operations are best done by repeated sittings, and at any given sitting the work done should be confined to one side of the tongue. When too much is done at one time, the subsequent inflammation is much too severe. A second operation should not be attempted until the pain and inflammation of the first have nearly subsided. This, as a rule, requires two days or more.

Very little in the way of after-treatment is necessary, and the soreness should not be excessive. For a day or two the food should be soft. The throat may occasionally be gargled with warm water containing aconite tinct. and potass. chlor. If very painful a weak solution of cocaine may be applied from time to time.

Of the comparative merits of these different methods of treatment something may be said. Good results may be obtained with the acids, but it is exceedingly difficult to get just enough acid on the applicator, and often the operator does too much or too little. It is not easy to manage. The Vienna paste and the nitrate of silver are more easy to control, but are rarely effective enough without repeated applications. The galvano-cautery is, undoubtedly, the most rapid and most effective. The action is easily controlled, and the subsequent inflammation is less marked, thus giving less after-pain and disturbance to the patient. As a rule, when the galvano-cautery is used in the naso-pharyngeal tract, the application is followed by considerable pain and swelling, but not so when used at the base of the tongue. On a few patients the writer has used

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the galvano-cautery on one side and one of the various methods on the other, and invariably the patient has preferred the cautery.

I have recently treated one case by making hypodermic injections into the body of the growth of two or three minims of carbolic acid and glycerine, equal parts. The result was good in every respect.

I have noticed one condition in this disease that, so far as I can learn, has never been mentioned by other writers, viz., the growths, at different times and without treatment, vary much in size. In one of my cases there would be a difference in size of nearly one-half in an interval of three days. This might account for the ability to sing well at intervals in those cases of lost voice mentioned by Curtis.

XXIV. The Treatment of Acute Inflammation of the Middle Ear.

By GORHAM BACON, M.D.,
NEW YORK.

It is not my intention in this paper to describe the different methods of treatment that have been recommended from time to time, in acute inflammation of the middle ear, but simply to refer to a plan of treament which, in my hands, has proved most satisfactory in its results, and to call attention to the use of the artificial leech, which I described in the *N. Y. Medical Journal* of Jan. 7, 1888. I feel justified in again referring to this instrument, as a number of others, who have since used it, have arrived at similar conclusions as myself.

Fig. 1.

The artificial leech consists of a scarificator, composed of seven lance-shaped needles, which are concealed. The depth of the punctures can be regulated by screwing or unscrewing the end or cap of the scarificator. When this has been determined, the spring

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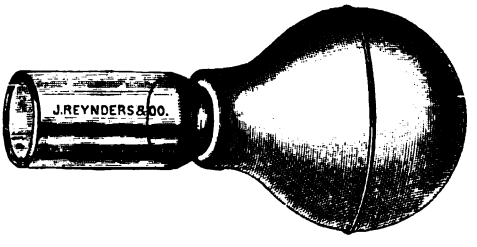
is pulled back, the instrument is applied to the parts and the tissues scarified.

A cupping-glass made adaptable to the parts about the ear, is then immersed in hot water for a few moments in order to promote

Fig. 2.



the bleeding as much as possible and applied close to the tragus, below the lobule, or over the mastoid process, according to the seat of the inflammation. The glass itself holds three drachms. The cup when applied is held in position by the patient.

The reasons that I gave a year ago for discarding the leech and substituting the scarificator and cupping-glass were the following:

1. The leech is particularly disagreeable to many patients, especially children.

2. It is frequently very difficult to arrest the bleeding following a leech-bite.

3. A leech-bite occasionally gives rise to erysipelatous inflammation and ulceration and not infrequently produces a circumscribed abscess even in apparently healthy individuals.

4. Leeches are not always to be had, especially in the country, and are very frequently a troublesome remedy besides being expensive. With the artificial leech, on the other hand, the quantity of blood abstracted can be entirely regulated and its application is more agreeable to the patient, besides being an instrument that is always at hand.

I use the artificial leech not only in dispensary practice, but also at my office, so that I am able to note the good effects usually following the local abstraction of blood, while I am certain of having the leech applied at the proper point about the ear, which is a most important consideration.

It is in the first or hyperæmic stage, either of catarrhal or purulent inflammation of the middle ear, where the tissues are deeply

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congested, that the local abstraction of blood is followed by such favorable results as are shown by relief from the pain and tension in the ear. The inflammatory process will frequently be cut short at once by the early application of the leech, and I believe that in all cases the further progress of the disease will be greatly modified.

Not only is the local abstraction of blood by means of the artificial leech followed by most beneficial results in the early stage of acute inflammation of the middle ear, but also in acute inflammation of the external auditory meatus and mastoid cells.

The following are a few among a great number of cases in which I have used the artificial leech.

CASE I.—Wm. C., æt. eighteen years, was seen by me January 11, 1887, on account of an earache in his right ear, which commenced on January 4th. The discharge appeared January 9th, but the pain continued. He had a similar attack a year ago. Watch, right ear, 0″; left ear, normal. Bone-conduction better than the aërial for the right ear. Right membrana tympani swollen, inflamed; perforation in the post inferior quadrant; some scanty purulent discharge in the middle ear, which was forced out by inflation. The artificial leech was applied and the pain was somewhat relieved. He was also given drops of zinc sulph., grs. iv–℥j, to use twice a day.

Jan. 15. The pain in the ear disappeared two hours after the cupping at the last visit and has not troubled him since. The canal contains pus in greater quantity. There is a slight enlargement of the glands over the mastoid. To continue using the same drops.

CASE II.—J. O'B. consulted me February 8, 1887, on account of pain in the left ear, which he had had for two weeks. It is especially severe at night and there is some pain on swallowing,

Examination.—Right auditory canal contains cerumen. Left membrana tympani somewhat congested and very much retracted. Watch, left ear, $\frac{15''}{48.}$

Politzer inflation somewhat painful. The artificial leech was applied just below the lobule and over the mastoid process. There was immediate relief from the pain. The patient was not seen again.

CASE III.—Thomas W., æt. nineteen, a carpenter by occupation, said that for the last three nights he has had severe pain in the left ear. There is also a dull throbbing noise. Watch, right ear, 4″; left ear, contact. The bone-conduction is slightly better than the aërial for both ears. Left auditory canal congested; there is also slight inflammation of the membrana tympani, but no perforation.

The ear was inflated after Politzer's method; some slight cheesy matter was syringed out and the artificial leech applied.

Feb. 18. He has had no pain since. There is a slight discharge in the

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canal. Politzer inflation. To use drops of zinc. sulph. grs. iv–ʒj. Watch: right ear, 8″; left ear, 5″.

25th. Much improved. To continue the same treatment.

CASE IV.—Max S., æt. forty-three, a porter, complained March 4, 1887, of a sore throat and cold, which he had had nine days ago and which extended to the left ear. He says he has had a blister over the mastoid. The pain has been very severe every night, but it is somewhat less to-day since the ear has been discharging.

Examination.—Right membrana tympani somewhat retracted and hazy; cone of light very small. Left auditory meatus inflamed and contains pus.

The artificial leech was applied just in front of the tragus, and he was given drops of zinc. sulph. grs. iv–ʒj.

The patient returned March 11, and said that he had no pain on the night of March 4, but that it has been present more or less since then. The ear was again cupped. He was not seen again.

CASE V.—Rebecca K., æt. thirty-eight years, came to the Infirmary March 29, 1887, and said that she first had pain in the right ear two weeks ago. The right membrana tympani was found very much congested, as well as the inner end of the auditory canal; the left membrana tympani retracted and showing evidences of catarrhal changes. The artificial leech was used and she was given drops of atropiæ sulph. grs. iv–ʒj.

She returned April 1st, and said that she had not had much earache but considerable pain in the right side of the head. The congestion of the drumhead and canal was much less.

CASE VI.—Mary G., aged twenty-five, a domestic, came to the Infirmary April 5, 1887. She says that last week she had a severe head-cold. Sunday night, three days ago, she had pain in the right ear, which has been present more or less since then, but has been somewhat easier last night and to-day. Watch: right ear, 0″; left ear, 15″. The right membrana tympani very angry-looking and congested and slightly bulging. The inner end of the auditory canal congested and losing its dermal lining. The membrana tympani was punctured and a few drops of pus evacuated. The artificial leech was then applied just in front of the tragus.

April 8. She returned to-day and said that the pain had been much less ever since she was here. The drumhead shows less congestion and there is some pus in the canal, which was syringed out. Watch: right ear, 1″. The ear was inflated by Politzer's method and she was given drops of zinc. sulph. grs. ij–ʒj.

CASE VII.—Anna K., aged fifty-three years, was seen April 19, 1887. She says she never had any previous ear disease. She has had a cold in her head and chest most all winter. She has lately had a fresh cold, and three days ago the right ear pained her severely. This continued yesterday but is not as bad to-day, as she only has an occasional stinging pain. She complains of a buzzing noise in the ear and there is some tenderness behind the auricle and below the mastoid. Watch: right ear, 1″; left ear, 6″. The right membrana tympani very much congested as well as the entire auditory canal, which is swollen as well.

The artificial leech applied to the ante-auricular region and also over the

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apex of the mastoid process caused the pain to disappear at once. The tinnitus was also much less. She was given drops of atropiæ sulph. grs. iv–℥j. She was not seen again.

CASE VIII.—John Van T., aged thirty-three years, railroad employé, May 27, 1887. He has had an earache on the left side steadily for a week, and on examination the bottom of the left auditory canal contains some inspissated pus, which was removed with the syringe. The drumhead was then found perforated and congested, as well as the inner end of the auditory canal.

The leech was applied in front of the tragus and just below the pinna. The pain entirely disappeared. The patient was not seen again.

CASE IX.—Caroline A., aged nine years, was seen at the Infirmary April 26, 1887. Two months ago, she says, she first had a discharge from the left ear which lasted for two days. She had no further trouble then till four days ago, when she had severe pain at night. This has continued day and night ever since and there has been no discharge.

Right membrana tympani dull, thickened, and retracted, with almost no cone of light. Left membrana tympani macerated, congested, with the dermal layer peeling off, as well as from the inner end of the auditory canal, which is likewise congested.

An artificial leech applied, relieved the pain at once. The ear was inflated by Politzer's method and she was ordered to douche the ear with warm water at home.

29*th*. The ear has been better since she was here, but this morning she experienced some pain. The leech was again applied. The patient was not seen again after this.

CASE X.—A physician, aged thirty years, came to see me January 3, 1889, on account of a dull pain and slight deafness in the left ear, which he first noticed the previous night. There was also some tinnitus, and an examination of the ear showed some congestion of the left membrana tympani, especially along the handle of the malleus.

The artificial leech was used, giving immediate relief to the pain. An astringent spray was used in the posterior nares and drops of a 4 per cent. solution of cocaine instilled warm into the ear. He was also told to take small doses of aconite. He returned the following day and an examination of the ear showed absence of all inflammation. The pain and noise in the ear had entirely disappeared.

XXV. THE OPERATIVE TREATMENT OF A CASE OF HYPEROSTOSES OF THE EXTERNAL AUDITORY CANAL.

BY THOMAS R. POOLEY, M.D.,
NEW YORK.

THE object of this paper being mainly to describe the operative treatment of an osseous tumor, or rather tumors, of the auditory canal, very little time will be given to the consideration of their

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causation or pathology except so far as may be necessary to a differential diagnosis of the case before us.

The terms exostoses or hyperostoses are quite generally used interchangeably. Cassell (*Transactions of the International Medical Congress*, London, 1881) accepts two kinds of osseous formations—hyperostoses and exostoses—varying in regard to origin, size, form, and structure. Hyperostoses are hyperplasiæ. They occur only in the inner portion of the osseous meatus, and never before complete ossification of the latter. They are of the consistence of ivory, have no pedicle, and are immovable, of conical form, and stand in no relation to other affections of the ear. The seat of exostoses proper is the boundary between the osseous and cartilaginous meatus. They are always pedunculated, slightly movable, and of very diverse form. Unlike the hyperostosis, several exostoses are never found at the same time. Yet the two forms may occur together. According to von Tröltsch, however, no sharply defined line separates the exostoses from the hyperostoses; but he applies the latter term to those diffuse growths occupying the whole length of the meatus, and "exostoses" to circumscribed, tumor-like, osseous new formations. If we, then, prefer the term hyperostoses, it is, after all, to be considered as a more or less arbitrary distinction.

The surgical treatment of these growths has hitherto been very unsatisfactory; and this is not to be wondered at when we consider the ivory-like density of the tumor and its situation. Nor is the danger all surmounted even when we have succeeded in the removal of the bony tumor, for the subsequent inflammation of the walls of the auditory canal is very likely to result in atresia, or even complete closure. Or an acute inflammation of the middle ear may result through wounding the membrana tympani, or an extension of the inflammation to the parts by continuity. It cannot, therefore, be wondered at that all sorts of compromises in the way of treatment are recommended and resorted to before any surgical procedure is tried, such as local painting with tincture of iodine and caustic solutions, the internal administration of mercury and iodine when the disease is supposed to have a syphilitic basis, and, when the growth has reached such a size as to interfere with hearing, attempts at dilatation.

Such procedures, however, seem to be tedious, of very doubtful use, and to the last degree unsurgical. So long as the growths produce no unfavorable symptoms, it is far better to let them alone;

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but, when they have reached such a size as to cause contractions of the meatus, so that cerumen and epidermic masses accumulate behind the stricture, to interfere with the hearing, and to produce a feeling of distention in the ear and pain and weight in the affected side of the head, we are justified in attempting the operation for their removal, difficult and dangerous though it may be, especially as the improvements in the instruments which can be adapted to this purpose have made the operation far less formidable than it formerly was.

The methods recommended are: (1) Removal by means of a gauge; (2) perforations of the exostoses by means of files, drills, and the dental engine; (3) removal by gouge and mallet; (4) destruction of the exostoses by the galvano-cautery; (5) removal by means of a fine chain-saw or écraseur, which can only be performed in a few cases.

By far the best of these methods, it seems to me, is the use of the dental engine, or some similar motor power for either drilling out or removing these growths. Such was the method employed by Matthewson in a case which he reported to the International Otological Society in September, 1876. The machine used was that known as Elliot's suspension dental engine. The burrs employed were ground to the form best adapted to this purpose, the smallest of the drills being about one and a half millimetre in diameter, and the larger ones two and a half and three millimetres in diameter. The plan of operation followed by him was first to perforate with the smallest drills the bony growth near its centre, then to use successively the larger ones to enlarge the perforations and run them together, and, by a lateral pressure, to ream out the meatus. When the case now to be described came before me, I remembered this one of Matthewson's, and, after revolving the matter over, determined to operate somewhat after the same method, but with a different instrument—the electro-osteotome invented by Dr. Milton Josiah Roberts, of New York. This instrument is provided with four interchangeable tool-bearing head-pieces, viz., a chuck, circular-saw, sectional-saw, and straight-saw head-pieces. Of these, the chuck, designed to hold and operate trephines, drills, and burrs, was obviously the only tool-bearing head-piece required for the operation under consideration. The bone-cutting tool selected for the removal of the growths was a hollow trephine. It consists of a shank adapted to be held by the screw clamping-jaws of the

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chuck. It is provided with a cylindrical gauge or protruding hood, clamped through by a screw, by the adjustment of which the depth of the cut is determined. The sides of this trephine are straight, which facilitates its passage through the bone. The trephine used in the operation was three-sixteenths of an inch in diameter, its circular form enabling the operator to place its cutting edge in a plane corresponding with the projecting bony growth. In operating the electro-osteotome, the whole weight of the instrument is sustained by a coil-spring or rubber connected to the arm of an adjustable crane, which can be attached to any table. The elasticity of a suspension cord permits of the free movement of the motor over a wide range of territory, so that it can be brought into any desirable relationship with the body of the patient operated upon.

The patient, a gentleman of thirty-five years of age, came to consult me about an obstruction in his right ear on September 12, 1888. He experienced but little inconvenience, except some diminution in hearing, and, upon introducing his finger in the meatus, found some hard obstruction, which he took for impacted wax. Upon examination, the meatus was found nearly occluded by a bony growth, or rather growths, one of which sprang from the posterior, the other from the upper wall and coalesced, leaving only a narrow aperture below and anteriorly, through which I could get a glimpse of the healthy membrana tympani. The integument covering the growth was somewhat red and sensitive. Both tumors had their origin from the osseous structure near the cartilaginous wall; that arising from the posterior wall measured at its base about four millimetres, that from the upper wall two and a half millimetres. The shape of both was conical. The watch was heard at about an inch and the voice at thirty feet. In the left ear a much smaller perfectly symmetrical growth as to position sprang from the posterior wall of the osseous canal and extended by a conical point into the meatus, but not enough to obstruct the canal or affect the hearing. The patient was not aware how long the growths had been in developing, as they had caused neither pain nor inconvenience, until he accidentally discovered the obstruction in the right ear, as already mentioned. He, however, recalled to my mind that only a year or two before he had consulted me on account of slight impairment of hearing, which was found to be due to impacted cerumen, and was cured by syringing. Iodide of potassium in gradually increasing doses was given, until he took about a drachm a day, and continued for some time without any effect in reducing the size of the growth. On October 2d, the tumors had evidently increased in size, and the medicine was discontinued. On November 2d, an operation was proposed and accepted by the patient. The deafness had increased, and there was a feeling of weight and pain in the ear and side of the face, which even made him desirous to have something done for his relief as

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soon as possible. The operation was performed on November 14, 1888, at 3.30 P.M., with the instrument already described, and with the assistance of Dr. Milton Josiah Roberts, Dr. J. R. Latham, Dr. Charles S. Ward, and Dr. J. Hasbrouck, Dr. Roberts having the control of his own instrument, with which his daily practice had made him familiar, the patient being placed in a suitable light upon a high table under ether. The operation was at first conducted by direct light, but later, as the daylight waned, the meatus was illuminated by mirror on the forehead of the operator and artificial light employed. The first step was to remove as far as possible the integument covering the growth, that it might not retard the action of the trephine. This was done by means of a small periosteal knife, the skin being circumscribed and scraped off. The bony growths, first the larger one, were attacked with the small trephines already described. The cutting edge of the trephine was set in a plane corresponding with the projecting growth. The trephine was replaced by a small-sized burr, and with this the cut surface representing the place of the attachment of the growth was smoothed down so that it was not quite flush with the surface of the external auditory canal. In a similar way the smaller growth was also removed. There was so much hemorrhage that it was necessary to stop frequently to swab out the canal and to cleanse the meatus by syringing, so as to remove the blood and débris of soft and bony tissue. The operation, which lasted nearly two hours, was thus rendered very lengthy and tedious. A probe could now be carried the whole length of the auditory canal, which was about of its normal width. There was so much oozing of blood that it was difficult to determine whether any damage to the membrana tympani had been done, but, so far as could be ascertained, it was uninjured. Antiseptic precautions were observed so far as possible. The canal was plugged with antiseptic hydronaphthol gauze and a bandage applied to keep it in place. Upon recovering from the influence of ether, the patient complained of no pain, and slept well the first night after the operation. The dressing was allowed to remain for four days, and was then removed. During all this time he complained but little of pain, and slept well every night. When the dressing was removed, however, there was considerable purulent discharge, so that it was thought best to leave the canal free for the purpose of cleansing. The walls of the canal were so swollen, especially in its posterior part, that the condition of the membrana tympani could not be made out. Up to this time he had suffered little or no pain. But on the evening of the sixth day after the operation he sent for me on account of very severe pain, and had all the symptoms of acute inflammation of the middle ear. The pain, which was relieved by the application of leeches and instillations of hot water, was soon followed by a profuse purulent discharge, and by carefully cleansing the canal I was able to detect a small perforation of the membrana tympani in its anterior lower quadrant. The ear was carefully cleansed by syringing with hot water several times a day, hot water frequently instilled, and instillations of Magendie's solution of morphine also used to allay the pain, which soon became much less. Coincident with this attack of pain, the hearing, which had been quite good, became very much impaired. The meatus and auditory canal were swollen,

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but not so much so that I could not watch the progress of the disease of the middle ear. The wound in the membrana tympani closed in about three weeks, and hearing again improved, so that the voice could be heard from twenty to thirty feet. The swelling of the auditory canal now, however, became very much more pronounced, causing very much contraction, especially in its posterior portion near the membrana tympani, so that not even the smallest speculum could be introduced for the purpose of examination. There was no longer any purulent discharge. This swelling of the walls of the canal (there were no granulations) threatened to close the canal entirely, especially in its posterior part, and was accompanied by a good deal of pain, but quite different in character from that of the acute inflammation of the middle ear. A variety of measures were resorted to to prevent closure of the canal, at first by dilatation with sponge tents, which did but little in the way of widening it, and caused no little inconvenience and pain. I then tried the use of elastic rubber tubing, using for the purpose pieces of flexible soft catheter recommended by Dr. Emerson, but these were still more painful than the tents, and had to be discontinued. Occasional applications of nitrate of silver were also made, but all of these plans seemed only to aggravate the swelling and to increase the difficulty. They were, therefore, all abandoned, and the case treated as one of acute inflammation by the frequent instillations of hot water only. Improvement now at once took place, as shown by the subsidence of the swelling and widening of the canal, and the meatus has now reached its normal size. There is still a considerable degree of contraction of the posterior part of the canal, but a glimpse of the membrana tympani can be had. All symptoms of pain and irritation have subsided, and the hearing is nearly normal for the voice. A watch, however, is only heard on contact. This was the condition of the patient when last seen, about three weeks ago. Careful examination does not reveal any remnants of the exostoses.

If we compare the results obtained in this case and that reported by Matthewson with those published cases operated on by other methods, it must be acknowledged that they give very much better results and are far less tedious and dangerous and more effective than any methods hitherto employed. Dr. Matthewson in his paper gives a brief *résumé* of the history of the cases which had been operated upon up to that time. We may best sum up the advantages of such instruments in Matthewson's conclusions: "that it is less tedious. A few tests of this and any hand drills in perforating dense bone will demonstrate that it is less dangerous, for the reason that with rapidly revolving drills perforations can be made with so slight a pressure that there is little danger of injuring the deeper parts of the ear or walls of the meatus by the slipping so likely to occur with hand drills or with hammer and chisel. The instrument is also held between the thumb and fingers in such a

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way as to interfere to a less degree with illumination and inspection of the meatus. During the operation the drills and burrs can also be used, not only to perforate with their points, but also to enlarge openings already made to any extent or direction by lateral pressure with their sides." All of the above-enumerated advantages which Matthewson alleges for the dental engine seem to be applicable to the electro-osteotome. The control of the instrument, while it may be more difficult to acquire, seems to be more certain than that of the dental engine; for, if we only give the matter a moment's thought, it must be apparent that, there being no weight sustained by the hand of the operator and no muscular power required to keep the cutting tool in contact with the bone, the tactile sense of the operator is unimpaired by muscular exertion, which is not the case when using bone-cutting instruments dependent for their power upon manual labor. The use of the trephine by setting the instrument close to the base of the tumor, thus cutting it off close to its attachment, would seem to be preferable to the method recommended by Matthewson, and less likely to leave a ragged and uneven surface. In conclusion, I wish to dissent from what seems to be the generally adopted plan of treating the contraction of the canal from swelling of the soft tissues by dilatation and the inserting of tubes. So far as one case goes to prove anything, the one just reported proves that such a plan is not only of no use, but even pernicious. The threatened entire closure of the canal was, I believe, only averted by the abandonment of all such measures, which only aggravated the irritation and inflammation. Whether the inflammation of the middle ear was the direct result of injury to the membrana tympani during the operation it is difficult to say. I am, however, of the opinion that it was not, but that it was caused by the extension of the inflammation by continuity.

NOTE.—Since this paper was read I have seen the patient again. The canal through its entire length has almost its normal size. The membrana tympani is almost of normal appearance, the perforation having entirely closed. Hearing for the voice is normal, and the watch can be heard at two inches. There only remains a slight tinnitus, which is daily diminishing.

DISCUSSION.

Dr. CLARENCE C. RICE, of New York: In regard to the comparative efficiency of the burr and trephine, the trephine removes tissue

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much more rapidly than the burr and is in every way a far more satisfactory instrument. We know that there are two dangers to be met in the use of the trephine in removing exostoses both in the nasal and in the aural channels; one is shock, which must necessarily be marked when the work is done so near a part so sensitive as the tympanic cavity, and another is the old-time surgical fever, which is now thought to be caused by absorption of septic material. It would seem to me that in ear work the treatment after the trephine had been used would be a matter of the greatest importance, the principal indications being to observe the strictest cleanliness and every possible antiseptic precaution. In so small a canal as that of the ear, it would be very difficult to carry out antiseptic measures. It is true, the aural surgeon has not to deal with the decomposing secretions found in the nasal cavities. Still I should consider it unsafe to use the trephine in the ear unless all precautions were taken to prevent the absorption of septic material. But I believe that all plugging of the auditory canal should be avoided. I do not think it possible to maintain asepsis by means of antiseptic dressings, and should prefer to treat surfaces in the auditory canal wounded by operation as open wounds—to secure cleanliness and prevent septic absorption by means of disinfecting lotions.

Dr. O. D. POMEROY, of New York: Those who have had a good deal of experience in these surgical operations and are familiar with their somewhat unsatisfactory results, are likely to pause and deliberate before performing them. Perhaps I am conservative, but I would not like to favor the operation in the condition reported, as I understand it.

Nothing has been said of the use of the chisel in these cases of exostosis, which term I would apply to growths smaller and more localized than the hyperostoses. I would not recommend the chisel for general use, certainly not in opening on the mastoid, but in the case of a small exostotic tumor I had no difficulty in removing it by means of the chisel. Small superficial parings of the bone should be taken off, as any effort to go deeply endangers the production of a fracture. There would be danger of this in the case of a true hyperostosis, and in a case similar to the one under consideration I should think the instruments used would be preferable.

Regarding the dressing, I am much opposed to plugging up the ear canal. In this case I should have preferred leaving the wound open and using antiseptics and frequent irrigations. The amount of violence necessarily inflicted on the canal was sufficient to excite an inflammation of the tympanum, and I am not certain that antisepsis would have prevented this accident.

Dr. POOLEY: In regard to the question whether the acute inflammation of the middle ear which followed was caused by septic poison

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I think not, since the patient showed no rise of temperature, nor had he symptoms which would give rise to that suspicion, despite the fact that he had an acute inflammation of the middle ear. The criticism of Dr. Rice and Dr. Pomeroy regarding closure of the canal, even under antiseptic dressing, is, I think, right, and I would not in future do it. But I do not think the inflammation of the middle ear came from it, but mainly from trauma with the trephine or a spicula of bone and extension of inflammation by continuity.

XXVI. Considerations concerning Extraction of Hard Cataract; with an Analysis of 309 Cases.

By HENRY D. NOYES, M.D.,
NEW YORK.

The topics to be considered in this paper relate to: 1st, the suitableness of a cataract for operation; 2d, the method of operating, with its attendant performances and possible accidents; 3d, the events of the healing process; 4th, the visual results; 5th, secondary operations.

The opinions and deductions are founded upon my own experience, while the statistics presented are partly my own and partly those of my colleagues in the New York Eye and Ear Infirmary. I have chosen to gather the results of operations by several surgeons in order to present what may justly be assumed to be the work of those who have the ordinary competent degree of experience and skill. In this regard, it appears to me, carefully analyzed results have special value as showing what is attainable by an average measure of trained ability; conceding, of course, that the highest possible skill could reach results of better quality. Moreover, the results in a public institution, whose arrangements and construction are not what the strict demands of hygiene, as now understood, call for, must of course be inferior to what would be attainable under more perfect discipline, management and construction, especially when a hospital is under control of a single, intelligent head. It is premised that among the eight operators whose work upon 309 cases between October, 1884, and January, 1889, is presented, none are included who have contributed less than twenty operations, which is about one-fifteenth of the whole, and the highest contribution of a single operator is one-fourth of the whole.

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1st. What constitutes the fitness of a cataract for operation is not yet fully agreed upon. It is widely held and taught that so long as any sight remains no operation should be done. In a general way this is true. But I wish to call attention to certain cases to which this rule does not apply. They are those in which the hardening or sclerosis of the lens extends beyond the middle parts or so-called nucleus, to the cortical layers, and these do not suffer the fissuring and disintegration which constitute ordinary cortical opacity. Instead of the white and striated look of ordinary cataracts, such lenses appear dull, smoky, deeply yellow; when of very long duration, say six or more years, they become reddish by reflected light and even black. Vision is greatly impaired, yet it may be possible to count fingers at three or six feet distance. By the ophthalmoscope one may even see the optic nerve. The special feature is that there is evidently a most irregular type of refraction in the lens; the same kind which is familiar in conical cornea or with diffused opacity of the cornea. The retinal vessels, if seen by the upright image, are twisted and undergo great distortions upon parallactic movements. Viewed from the distance of a foot and by moderate illumination, the irregular shadows flitting across the pupil, and the twisted cycloidal and spiral movements of the vessels, clearly point out the irregular refractive quality of the lens and explain the impaired sight. Such eyes may have become myopic in the strict sense. There may be narrow striæ running down from the margin of the lens, but there will be little disorganization of the superficial layers. These lenses pass through their changes very slowly, and many times is an error made in prognosis, as to the period when sight will be wholly lost.

I merely allude here to the myopia of senile cataract, which depends chiefly on increase in the refracting index of the lens. When a certain degree is attained, it may for a long time stand with little change, or may end in cortical opacification and complete blindness. I have seen such myopia amounting to 3 and even 5 dioptries; lower degrees of 1 D. and 2 D. are common. These are the cases of so-called "second sight."

The practical point respecting the cataracts now referred to is, that they should not be refused an operation on the ground of their immaturity. I can from personal experience cite many instances to justify this dictum.

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M. J. S., aged forty-eight, Middletown, N. Y. O. D. lens deep red, posterior polar opacity, and numerous molecules and no striæ; V. = fingers at one foot. In O. S. appearances less intense but similar; counts fingers at five feet.

J. P., aged eighty-five. O. D. lens perfectly black, no reflex from fundus. O. S. has three fine striæ on nasal side, diffuse haziness of lens, a silvery lustre of surface coming from the capsule; V. = $\frac{8}{70}$.

C. F. Y., aged fifty-one. O. D. lens semi-transparent, fine striæ, molecular haziness, no cortical opacity; V. = fingers at five feet. Seven months later, appearance of lens and vision the same. Extraction followed by vision = 1, or $\frac{20}{20}$. In O. S. same appearance; operated on seven months after, and in that ultimately V. = $\frac{20}{20}$.

It is needless to cite many cases; nor have pains been taken to indicate them in the statistics because they are usually set down as unfit for operation. But in my experience this opinion is unsound because a separation of the lens from its capsule is possible and the pupil is easily rendered clear at the operation.

Wholly different is the aspect of a truly immature cataract, whose cortical layers have begun to disintegrate with the shrinking of the nucleus. Broad striæ, a deeper opacity with intervening clear spaces, denote important differences. To this class the operation of massage of the lens with iridectomy (Förster) and sometimes without iridectomy (Pooley) is in general acceptance. This was done in 34 out of the 309 cases, or in about 10 per cent. It is employed when useful vision has ceased, to avoid a long delay in the natural maturity of the lens.

To some cases this proceeding is inapplicable, and it is important to signalize them: 1st, are the sclerosed lenses above referred to; 2d, posterior polar cataract which usually accompanies choroidal disease; 3d, cataract in myopia; 4th, laminated cataract (congenital). In general, it is not suited to cases where the lens is disposed to induration and where the cortical layers have not already shown signs of disintegration. The practice of some is to needle the lens to hasten maturity, but this involves risk more serious than does massage. The effect of Förster's operation on the subsequent operation and during the healing will be hereafter referred to.

It is important to remember that the lens in very old persons is always large and grows larger with age. We owe this fact to the studies of Mr. Priestley Smith, and, of course, sclerosed lenses are large. There may be a small cornea, or by a broad arcus senilis it may seem small in diameter, while the lens will be eight milli-

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metres in diameter. It is unnecessary to refer to hypermature cataracts, except that it is difficult sometimes to extract the nucleus, because it is small, and also that hypermature cataracts will permit removal in the capsule not infrequently, because the anterior part of the vitreous is also likely to be fluid, the capsule will separate from it, and the suspensory ligament will be weak and easily rupture.

2d. The operation chiefly practised is one called by Graefe's name, but which really is a peripheral section at the upper margin of the cornea, with iridectomy which by some is made broad, and by others narrow; my own preference is for the latter. Since 1884 cocaine has become the approved anæsthetic, while ether and chloroform are reserved for timorous and unruly patients, or for cases of special difficulty. It will be found that a large proportion of the failures and of the defective medium results are among those who take ether. While cocaine has vindicated the high expectation in eye surgery with which it was greeted, it has certain disadvantages. It desiccates the cornea and makes the epithelium easily rubbed off. Used in very strong, say 10 per cent. solution, it is capable of making it deeply hazy. It need not be used in more than 2 per cent. or at most 4 per cent. solution, once or at most twice with an interval of fifteen minutes before the operation. A second disadvantage is, that it causes diminution of tension. This is only seldom carried so far as to be troublesome, yet it has been to me the cause a few times of difficulty in making the section because of deficient resistance. I have even seen the cornea dimple under the point of a sharp knife. In cases of plus tension its effects are difficult of procurement.

The practice of washing the eye with antiseptic fluids has become habitual. The usual fluids have been boric acid 4 per cent., corrosive sublimate 1 : 5000, and biniodide of mercury (Panas' solution) 1 : 20,000. None of these is truly antiseptic, yet they aid in removing mucoid secretion from the conjunctiva, and are of especial value for ridding the eye of blood and getting cortical matter. A bulb of oz. jss capacity with a hard-rubber nozzle one and a half inches long is satisfactory. It is to be stated that solution of corrosive sublimate will, if the corneal epithelium be desiccated by cocaine, cause an opacity which may be serious. The choice between one form of fluid or another is not easy to decide. The majority of cases have been irrigated with corrosive sublimate, yet

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results equally good have followed boric acid, so far as could be determined. It seems true that, while cleansing of the skin of the lids and of the tarsal edges and of the conjunctival sac by a simple aseptic fluid has advantages, these proceedings give no absolute guarantee against suppuration. Instruments are carefully rendered innocuous by immersion in carbolic acid 5 per cent. and then dipped in alcohol; the hands of all concerned are scrubbed with soap and the nails cleansed by a brush assisted by free use of powdered borax.

An important feature of operations is the use of the bulb to wash out of the wound and of the anterior chamber blood and the débris of the cataract, besides helping to force the iris back to position. It is not needful to put the point of a syringe inside the eye; the stream is large enough and forcible enough to find its way within. The fluid should be lukewarm, and all those above mentioned seem to answer well without irritating the iris. The mercurial salts have the advantage of coagulating the cortex and making it more visible. The use of eserine, either on the dressing mixed with vaseline or in solution in the eye, has been frequent and seems to be useful. On the other hand, some operators have used atropine in strong solution, gr. xvj ad oz. j. The choice of agents depends, it seems to me, on the presence of retained cortex, which indicates a mydriatic; while a normal operation, a disposition to prolapse of iris, or the loss of vitreous, indicate eserine. The latter is certainly demanded when no iridectomy has been done. The method of opening the capsule has been various; sometimes peripheral, usually central, and with the design of making a thorough laceration. The prevention of its entanglement in the wound is highly important and is favored by irrigation with the bulb.

The size of the corneal wound is a prime factor in the proceeding. For myself, after some disagreeable experiences, an error in this respect no longer happens. I have no hesitation in making it two-fifths of the corneal circumference, although this measure is seldom fully reached. It is extremely difficult to measure exactly the size of the wound. If one follows diagrams, the wound is almost certain to be too small. The depth of the anterior chamber and the diameter of the cornea cause serious differences, because a single millimetre is greatly important. What results from a scanty wound may be noted in the disposition to loss of vitreous, with consequent necessity in some instances of introducing delivering instruments,

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or in the resort to a hook or spoon even without loss of vitreous. Better is it to enlarge a wound with scissors than to attempt to force a lens through an opening too small. Irido-cyclitis, even suppuration, wait on such mistakes.

Hemorrhage is always annoying and may be extremely troublesome. It not only may make the operation difficult, but often involves bruising the eye to secure a clear pupil. It comes from wounding the conjunctiva, or from the limbus, and especially from the iris. It is favored by a state of reduced tension, but it especially indicates degeneration of vessels. Under ether we are especially liable to be annoyed by it. I have noted that it often precedes severe iritis and favors thickening of the capsule. Irrigation actively kept up is the best means of removing it. It is far better than massage. In case the counter-puncture falls behind the limbus, we are liable to hemorrhage and we always incur another difficulty in the irregular contour which the wound is pretty sure to have, and to it can be attributed some cases of irido-cyclitis. In a number of cases the iris has fallen over the knife before completion of the wound. This accident happens more frequently to certain operators. It is in some measure due to the resistance of the patient and to the subtension of the globe. Its effect is not by any means so detrimental as is that of an inadequate wound, yet it implies violence and is to be deprecated.

Escape of vitreous is the danger most earnestly striven against. It happens at any stage of the proceeding, but is most frequent when the lens is being expelled. If the operator have luxated the lens in using the cystitome, he must be wary of it. Either his hand has been too heavy, or the vitreous is fluid in its anterior portion. Loss of vitreous before the lens is out, is most untimely and necessitates the introduction of an instrument for delivery. It is often the patient who is to be blamed for the accident, and especially after delivery of the lens, and its prevention will test the tact and temper and patience of the operator like nothing else in surgery.

The importance of the occurrence is shown in the following figures: Among 21 failures, loss of vitreous happened 9 times; among 31 cases giving only moderate visual results, in which surgical faults were committed, loss of vitreous occurred 7 times. That is, in 52 imperfect cases, 16 times did this accident happen. On the other hand, this accident took place among 245 successful cases 33 times. In other words, the chance of escaping ill-effects

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was about 2 to 1, and the mishap occurred in about 16 per cent. of all the operations. The question whether it happens more or less frequently under general anæsthesia has not been examined. Not infrequently the lens emerges with the vitreous, in other cases it sinks out of sight. Prognosis is better if the vitreous is fluid than if it be normal in structure.

Entanglement of the iris or of the torn capsule in the wound is a recognized and serious error. It can be avoided by irrigation and by passing the spatula gently along the angles of the wound. In case the tension of the globe is supra-normal, even after the lens is out, there is decided liability to iris prolapse. We by no means guarantee exemption from this mishap by iridectomy. On the contrary, very numerous cases attest the occurrence of incarceration of the pillars of the coloboma, and cystoid cicatrices testify to its existence. To the operator this may remain unknown for many days, and it happens both early and late in the healing process as well as at the time of operating.

Out of 309 cases which form our present material, iridectomy was done 274 times. In 35 cases no iridectomy was done, and this is sometimes called simple extraction. These operations were nearly all done by two operators. Although the number is very small, it is proper to give the peculiarities and results of the method.

The incision must always be of full proportions. I have made it at least two-fifths the circumference of the cornea, and it should lie in the limbus, not at all in the sclera. It is placed more peripherally than the old flap extraction, and practically in the same region which is usually chosen in the so-called Graefe's method as now done. Division of the capsule is necessarily central, because the pupil is never dilated intentionally. Expulsion is more difficult than with iridectomy and requires pressure and counter-pressure, and the lens must make a nearly quarter revolution to enter the pupil and reach the wound. If the pupil be rigid, the attempt must be given up. Replacement of the iris may spontaneously occur, or be induced by irrigation or effected by the spatula. The real difficulty lies in clearing the pupil of débris. Massage accomplishes much, but irrigation is decidedly the most effective, while introduction of curettes and spoons is to be deprecated. Cases with much soft cortex are desirable, while the full hard cataracts best lend themselves to this method. Most troublesome are the very small cataracts, say five millimetres in diameter, which, fortunately,

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are rare. We meet them as nuclei of hypermature cataracts and very seldom without this degeneration. After completing the operation, eserine is to be used freely both by instillation, gr. ss ad oz. j, and upon the pad, gr. j ad dr. j vaseline. In the 35 cases vitreous was lost 5 times; in one instance with simultaneous expulsion of the lens. The accidents to the iris were prolapse in 6 and drawing up of the iris toward the wound in 5. The latter is a partial entanglement confined to the peripheral part, and in some instances may be due simply to exudation extending from the wound to the iris. In one case the iris was drawn up apparently behind the wound as if it had adhered to the ciliary processes—a condition similar to what is sometimes seen after a blow. The lens was in this case extremely small and difficult of delivery; there occurred loss of vitreous and yet vision was $\frac{20}{40}$. The period when prolapse of iris was noted varied from the third to the seventh day. The eye was in most cases not opened until the third day or even later, and it is impossible to say when the hernia occurred. Supranormal tension, which we sometimes find, favors prolapse, but it is clear to my mind that the primary factor is tardy union of the wound. If it has been contused by difficult delivery, by frequent introduction of instruments, if hemorrhage has been abundant, if vitreous has escaped—these circumstances hinder the quick and firm coaptation and healing. Research in cases of death soon after normal extraction of cataract, shows that the epithelium dips down into the wound and constitutes a large element in the callus, as it may be called. Lymphoid cells are seen gathering in great numbers from the corneal substance, but epithelium has far more to do in the new tissue than has been suppposed. See my case published in *Trans. of Amer. Ophth. Soc.*, 1887, and Becker's cases, especially Taf. xxx. Fig. 2, *Atlas der patholog. Topographie des Auges*, 1874, where the early healing of the wound is shown to occur principally from the outside. Now the presence of any foreign matter like clot or lens substance, keeps the wound apart on its inside lip, and restlessness of the eyeball will tend to favor yielding of the cut. Add to this, swelling of the corneal tissue adjacent to the wound, and the preparatory arrangements are fully realized for entrance of the iris. This in my case of death with autopsy of the eye, occurred in spite of a normal operation and normal healing process; and being a Graefe's operation with iridectomy, it might not have been noted but for the early death and examination. As a fact, intru-

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sion and entrapping of the iris in the wound has been a frequent occurrence in extraction with iridectomy, taking place at the pillars of the coloboma and causing many serious complications. It is my conviction that the relative proportion of prolapse of iris in extraction with iridectomy and without iridectomy, would be found only slightly larger in the latter case if the operations in both were done with especial smoothness and exactness. It is, however, true that for simple extraction the wound must be ample, exact, correctly placed and regular, and there must be the minimum of exposure and manipulation of the eye. All these conditions imply highly developed technical skill in the operator and docility in the patient.

It will be noted that there were no failures in the 35 simple extractions; and as to visual results, successful cases were 27, medium 7, unknown 1. The visual acuity does not exceed the average of the cases with iridectomy, and this result accords with the observations of others.

The incidents of the cases where the lens had been ripened by doing Förster's operation—*i. e.*, iridectomy, with concurrent massage of the lens—deserve to be considered. There were 34; of which—successes 24, medium vision 7, failure 3. Extraction is reduced to extreme simplicity; yet that the dangers in the operation are considerable appears from the frequency of loss of vitreous, viz., 10 times, and in 4 instances instruments were needed for delivery. The date of the first operation varied between one week and eight months. In all cases considerable cortex is encountered and vitreous prolapse is frequently met with in getting this out. Often the patient who on a previous occasion has behaved well, now loses self-control. In 8 cases iritis occurred, and in 4 of them it was slight. Certainly the tendency to iritis is important. Failures occurred 3 times; once by iridocyclitis after spontaneous extrusion of lens and vitreous, in another case by secondary hemorrhage after loss of vitreous (the eye was myopic), in the third case no account is given of the reason for failure.

3d. The incidents of the healing process in the cases of failure, which were 21, may be grouped into—infection of the wound 9 times; severe iritis and iridocyclitis, 10 times; vitreous in wound 1, hemorrhage 1. One patient is said to be corpulent, which is unfavorable; one is marasmic, another a drunkard; one eye had pterygium; another had chronic conjunctivitis. As already said,

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in 7 cases loss of vitreous attended the operation. The actual cautery is of no avail when infiltration has passed much beyond the wound, and drawing out the exudation cannot always be effected.

In cases with medium results, which were 43 in all, the defective vision was due in 14 to faults in the eye existing prior to the operation, such as maculæ corneæ 5, atrophy of choroid 5, atrophy of optic nerve 2, detachment of the retina 1, pterygium 1 = 14. The cases surgically faulty exhibited infiltration of the cornea in 8, hypopyon in 1, iritis in 8, slow union of the wound in 1, thickening of the capsule in 10.

Among the 245 successful cases, 117 had to contend with irregularities in the operation, viz., loss of vitreous 33, severe hemorrhage 35, unintentional cutting the iris during section 20, scanty wound 13, the use of instruments to deliver the lens 14, injury of the eye during the healing 2.

Infiltration of the wound happened in 3, hypopyon in 2, severe iritis in 9, opacity of cornea in 5, reopening of the wound in 5. For purulent infection of the cornea the galvano-cautery was used, and in one case three times. Opacity of the cornea was due in some degree to the usual traumatic keratitis, but it was likewise produced by the corrosive sublimate even when only 1 : 5000, and to this result I have no doubt cocaine contributed. Reopening of the wound is due largely to enfeebled condition of the patient, and is to be met by stimulus and feeding and pressure bandage. In all the cases of reaction, the regular treatment is prolonged use of hot water, atropine, washing out the eye if secretion exists, leeches, quinine, alcoholic stimulus in those whose feebleness or previous indulgence demand it. In a few instances, not more than four or five, the lids were closed by plasters; in all the others a bandage was employed and not removed until the third or the fifth or the seventh day. Confinement to bed was from two to ten days or perhaps more. Practice in this regard is various. One notable case was a patient of mine who had lost one eye by an unsuccessful operation at the West. A solution of bichloride of mercury 1 : 2000 was used to wash the skin about the eyes, and 1 : 5000 to the conjunctiva. In twelve hours he developed an intense erythema simulating erysipelas; the bandage was removed, nothing but cold lotions applied and the healing of the eye was uneventful; he obtained vision $\frac{20}{40}$.

5th. The number of secondary operations has not been calculated; of them the record is imperfect. It is to be mentioned that they are

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not always innocuous. They sometimes set up severe inflammation, viz., purulent irido-phakitis. Why this should occur when a simple needle wound is made and thorough disinfection practised, is not to be explained by introduction of germs from without. It must be by exciting to activity germs already existing in a dormant state within the eye. Such surprises ensue in cases where severe reaction followed the original operation. They have occurred to me mostly where the capsule was both thickened and adherent. On the other hand, an iridotomy with Wecker's scissors or a knife, even when we are dealing with tissues more deeply damaged by inflammation, is seldom followed by so great mischief. An iridectomy is rarely followed by harm. I have several times lost eyes by secondary needlings, while the more serious secondary operations are borne with much greater impunity.

In summing up the cases which have been utilized, the result of operations upon 309 cases was as follows:

Successes with vision $\frac{1}{10}$ and better . .	245 or 79 per cent.
Successes with vision less than $\frac{1}{10}$ . .	43 or 14 "
Failures	21 or 7 "
	309

If careful selection of cases had been made, the showing would have been much better, but while the surgical repute of the operators would have stood higher, the nobler attributes of the surgeon, who puts all his powers and capacities at the service of the distressed, would have been tarnished. There were eight operators, of whom five contribute 139 cases, with full success 78 per cent., partial success 13 per cent., failure 9 per cent. Of three who contribute 172 cases, the results are: full success 80 per cent., partial success 14.7 per cent., failure 5.3 per cent. The personal equation appears not so much in the proportion of full successes as in the category of partial successes and of failures. A very large portion of the patients were of the true pauper class, and many the victims of evil habits.

It must be added that 2 cases of sympathetic ophthalmia occurred among the 309, and 2 deaths took place, 1 from heart failure, and 1 from general exhaustion.

The degree of vision in successful cases is shown in the accompanying table. In some instances secondary operations were done,

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but the proportion was less than one-third. In 21 cases no record of vision is given, but the results were known to be successful.

$\frac{39}{100}$	39 cases
$\frac{47}{100}$	47 "
$\frac{61}{70}$	61 "
$\frac{35}{50}$	35 "
$\frac{29}{40}$	29 "
$\frac{7}{10}$	7 "
$\frac{5}{10}$	5 "
$\frac{1}{10}$	1 case
$\frac{1}{10}$	1 "
	224

XXVII. The Purulent Conjunctivitis of Infants, and Blindness in New York State.

By LUCIEN HOWE, M.D.,
BUFFALO, NEW YORK.

I desire to call the attention of the Society to the fact that there is in the State of New York, as in the United States, an apparently rapid increase in the number of blind; that a very large proportion of blindness, here as elsewhere, is due to the purulent ophthalmia of infants; that by the use of methods already known this could be materially lessened, but in spite of that, no systematic effort is made to do so. I propose in this paper to take up these different points as briefly as possible and in the order mentioned. The subject of the rapid increase of blindness is considered in detail in the report of the committee on that special subject, which is presented to the Society at this meeting. As I had the honor of presenting that, I feel at liberty to refer to the same figures again, and to say that the reports of both the United States census and the State census indicate that blindness is increasing very much more rapidly than population. When we compare the Report of the United States Census of 1870 with the Report of 1880, we find that the population of New York in 1870 was 4,382,759, and in 1880 it was 5,082,871, being an increase of 15.9 per cent.; whereas the number of blind in New York State in 1870 was 2213, and in 1880 was 4981, being an increase of 125.07 per cent. In a similar way if we compare the State Census of 1875 with the United States

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Census of 1880, we find that the population in 1875 was 4,698,958, and in 1880 was 5,082,871, being an increase of 8.1 per cent.; while the number of blind in 1875 was 2256, and in 1880 was 4981, being an increase of 111.03 per cent.

In other words, official reports show that during the ten years preceding 1880 blindness in the State of New York increased eight and two-tenths times as rapidly as the population, and during the last five years of that decade it increased thirteen and seven-tenths as rapidly. I think these figures are sufficient to show the importance of the subject without any comment of mine. It is not improbable that there were errors and imperfections in these statistics, the United States Census of 1880 being very complete, the others incomplete. But it is hardly possible that those differences in the manner of enumeration would account for more than a part of the increase as is here shown, and when the facts are taken up in detail and carefully weighed, one cannot but arrive at the conclusion that certain causes have tended to produce an increase of blindness out of proportion to the increase in population, and much greater than there is any necessity for.

In the second place I wish to show that the most important factor in the production of blindness is the ophthalmia of infants, or as it is otherwise called, the purulent ophthalmia or purulent conjunctivitis of children, or ophthalmia neonatorum. In this country, unfortunately, very few systematic investigations have been made as yet into the causes of blindness. It is probable, however, that the same diseases here produce the same results as elsewhere, and there is no reason to suppose that there is any less proportion of the ophthalmia of infants in America than in Europe. For our present study, therefore, we are entirely warranted in drawing conclusions from data obtained there. On examining any statistics concerning the causes of blindness, the results found will vary somewhat according to the age of the individuals, certain diseases like cataract, glaucoma, etc., belonging particularly to advanced life, and the one we are considering, of course, to early life. In a list of 2528 blind *of all ages*, collected by Magnus, it was found that the ophthalmia of infants was more destructive to vision than any other disease or form of accident, that causing 10.87 per cent. of the unfortunates.

To appreciate its true importance we should see how large a proportion of the blindness *among children* is due to that disease.

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Thus, Fuchs found that among 3204 cases of blindness collected from asylums in different parts of Europe, 23.5 per cent., or nearly one-quarter of the entire number, are doomed to lifelong darkness, because of the ophthalmia in infancy. In certain countries where all the inmates of all asylums are counted together, the proportion who have become blind from this disease is found to be even a little greater. Thus, all the asylums in Switzerland gave 26.02 per cent.; all the asylums in Germany gave 25.83 per cent.; all the asylums in Austria-Hungary gave 20.47 per cent.[1]

In order to ascertain, in a similar manner, the influence of this disease and others in the production of blindness in this State, I made an examination (with the aid of my former assistant, Dr. Starr) of the eyes of 128 inmates of the New York Institution for the Blind, at Batavia. For each of these, one of the accompanying blanks was filled out and the results tabulated (diagrams shown). It was seen that here also the ophthalmia of infancy produced more havoc than any other disease, 23.4 per cent. being caused by it.

Next I wish to call attention to the fact that a very safe, simple, and reliable method is now known by which this disease can be, to a great extent, prevented, and to show how decided would be the advantages if it were thoroughly employed. The figures which I have given in regard to the blindness caused by the purulent ophthalmia of infants were collected largely from the examination of individuals born before Credé's method had come into general use even in Europe. At that time this large proportion of eyes were annually sacrificed to the disease. As early as 1874 or 1875 various forms of disinfectants had been used as preventives, but in 1880 Credé first began his method of treatment. That consists in a thorough cleansing of the eyes of the infant immediately after birth, and then applying a two per cent. solution of nitrate of silver. This is done only once, and in that consists the whole of the so-called "Credé's method." As for the reasons of this from a bacteriological point of view, it is out of place here to go into any detail, except to mention that as this solution of silver removes the superficial layer of epithelial cells, it probably destroys, at the same time, any germs which may be in them. Whatever theory there may be as to how the nitrate of silver acts, there is fortunately no question as to the practical results. This has been determined by exactly

[1] Fuchs, idem, page 70.

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recorded cases which can be counted now, not by tens or hundreds, but by some thousands; not observed by one practitioner, but by many; and especially we have lists showing the effect of treatment without this method, as well as with it. I need not take these up in detail, but simply give the summary.

The following table gives on the left side the names of six different obstetricians, who used no treatment for the eyes of 8798 children born in institutions of which they had charge or in private houses. Among these children there were 8.66 per cent. who had ophthalmia in a greater or less degree. In another list I have placed the results obtained by five observers, who directed the treatment of 8574 other children with a two per cent. solution of nitrate of silver. In these cases there were only 0.65 per cent.

AUTHOR.	Without precautions.		Two per cent. silver nitrate.	
	Total number of births.	Per cent.	Total number of births.	Per cent.
Olshausen	550	12.5	.....	.....
Credé	2897	10.8	1160	0.1–0.2
Königstein	1092	4 8	1250	0.7
Krukenberg	1266	7.3	703	0.14
Felsenreich	1887	4.3	{ 1st period 3000 { 2d period 2100	1.9 1.0
Bayer	1106	12 3	361	0
Total	8798	.....	8574	.....
Average per cent. .	.....	8.66	.....	0.656

If any further evidence were required to show the advantage of these steps for preventing the wholesale blinding of children, I would cite the example of certain governments in their enactment of laws regulating such precautions.

In December, 1882, Austria recognized the advantages of Credé's method by its official recommendation to physicians in the State service;[1] and, according to section seventh of the directions for nurses in Austria, every midwife is required to call a physician to the patient whenever she finds that the child under her care de-

[1] Fuch's Verhutung der Blindheit, page 136.

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velops the ophthalmia of infants.[1] The Hungarian Secretary of the Interior issued a pamphlet on the subject of the ophthalmia of infants, designed for distribution among the nurses of that country.[2] In Switzerland it is also obligatory upon them to give notice to the physician of the existence of any such disease. This was established as far back as 1865, and, according to Prof. Horner, of Zurich, not a single case of blindness from this cause in an individual born since then had entered the large asylum in that city up to the time of his death. The Prussian regulations for nurses for 1878 give particular directions and instructions concerning this important point, and in the French official directions for 1880 a note was inserted also calling attention to it.[3]

In view of this we may ask ourselves, What has been done or what is being done in this country, or particularly in the State of New York, for the prevention of this disease? The answer to this question can be brief: By individual effort, very little; by combined effort or by the State, absolutely nothing. And yet the same reasons exist, in a manifold stronger degree, why the same plan should be adopted in this country; why practitioners here should take advantage of the means already at their command for lessening the effects of this terrible scourge.

I think we are safe in speaking of blindness as a scourge, no matter from what standpoint it is viewed, whether of the economist or of the philanthropist. From the report of the committee to which I have referred, it will be seen that the blind cost the State of New York each year considerably over a million and a half of dollars, or exactly, $1,791.169; and it is safe to say that at least one-fifth of the cases are due to the ophthalmia of infants; we can consider, at a moderate estimate, that simply the effects of this disease cost about three hundred thousand dollars every year.

It is out of place in a paper which treats only of the scientific phase of a subject to refer at any length to its importance viewed from the standpoint of the philanthropist; we have to do only with the medical aspect of the question. But in this respect it makes great demands upon us as physicians. For, if any mother were to decide the question for her child between lifelong blindness and death, she would in most cases prefer the latter. Now, if a remedy were known whereby the death-rate of those who

[1] Id., page 140. [2] Id., page 136. [3] Page 135.

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suffer from a certain disease could be lessened several hundred per cent., there is no doubt that physicians would avail themselves of it immediately. But is it the case in this instance? I do not make a plea for Credé's method as the only one; it is possible that in a short time some still better treatment may be found. But I do say that as long as there is such a means of preventing misery at our command, and one which can be simply and efficiently employed, it is next to criminal negligence for any practitioner to omit the use of nitrate of silver in every case, without exception, which he attends. Perhaps there are those who think such a rule very good for obstetricians in charge of large institutions, but not necessary in private practice, and surely not for those whose patients are scattered over a large territory. It must be remembered, however, that only a very small part of the births occur in institutions, and the profession is quite as responsible for the health of patients outside of such places as it is for those inside. There are other practitioners, men of keen perception and large experience, who have told me that they could not believe that the ophthalmia of infants was so frequent. In a country practice, extending over a considerable territory, they see such cases only at rare intervals. It is true we are always surprised at the aggregate when the separate parts seem small, but it is often when the patient is at a distance, and the physician has almost if not entirely ceased his visits to the mother, that the disease in the child's eyes begins to make its appearance; the nurse imagines she can take charge of the rest, and the physician may not hear of the child again until blindness occurs. In just such a practice should Credé's precaution be the invariable rule, and the necessity of it is shown by the fact that, as a rule, even more blindness exists in the sparsely settled countries than near the large cities in this State; there it is that the nurses have full control.

In view of these facts, I think it proper to submit the following as the course which we should pursue in combating this disease and attempting to lessen its effects: First. To call the attention of the profession in general to the apparent increase of blindness in this State and in the United States, to the importance of ophthalmia in children, and to the efficacy of proper means for preventing it. Second. To request the examiners of nurses and midwives to require of the candidates some knowledge of the dangers of the ophthalmia of infants and an acquaintance with the methods of prophylaxis now in use. Third. To instruct our committee on

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legislation to formulate and recommend the passage of a law by which all midwives in this State shall be obliged to report the existence of any case of infant ophthalmia within twenty-four hours after its occurrence, to the family physician, to the district physician, or to some legally qualified practitioner.[1]

XXVIII. Excision of the Joints of Both Elbows.

By J. P. CREVELING, M.D.,
AUBURN.

The propriety of excision of the elbow-joint for immobility as well as injury is not a question for discussion at the present time. It is sufficient to know that the joint is ankylosed at an angle that renders the arm, as far as the ordinary requirements go, comparatively useless. It does not seem to me that the direct result of the operation is much influenced by the cause of the immobility, as some cases operated on, where the disease was due to constitutional trouble, have rendered results quite as satisfactory as those due to merely local causes. To extend these remarks to the ultimate results they would, of course, be comparative, as the use of the arm would correspond with the constitutional condition of the individual. But the object of this paper is merely to report a case of unusual interest, as both joints were excised, and under the most adverse circumstances, yet the patient acquired very good use of both arms. As far as I have looked up the record of reported cases, I fail to find a single instance in which both elbows have been removed, either for injury or disease. The following is a brief history of the case.

J. G., a boy, aged twelve, was admitted to the City Hospital in July, 1885. Just previous to his admission he had had thirty-nine abscesses, distributed over his body, but largely confined to the back, some being quite large, while others were small; they had mostly run the usual course, and after suppuration healed kindly. He was pale and anæmic with elevation of pulse and temperature. There was a sinus over the middle of the sacrum, discharging a thin, purulent fluid; there were also two sinuses extending into the joint of the right elbow, and three in the left, both joints being ankylosed at an angle that rendered the arms almost entirely useless. Under hospital care he improved rapidly, his appetite and nutrition became

[1] By unanimous vote of the Society this final recommendation was formally adopted.

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good, he increased in weight, the temperature became nearly normal, but his pulse remained accelerated. No satisfactory family history was obtained.

On the 17th of September, other means having failed to procure motion, I decided to excise the joint of the right elbow, which was done by making a straight cut four inches long on the radial side of the arm and extending longitudinally through the longer sinus, the knife then carried closely round the head of the humerus detached the soft parts, and a chain saw divided the bone just above the tuberosities; the dissection was extended down to the neck of the radius, and the two bones sawn through at this juncture. All bleeding was allowed to stop completely, and the wound thoroughly irrigated with a hot carbolized solution, after which it was closed without drainage, and the arm was placed in a splint made for the purpose, extending from near the shoulder to the hand, with a relief of some two inches at the elbow. The operation produced but little shock, the temperature at no time exceeded 101°, and the pulse on one occasion only reached 120. The discharge from the wound was but slight, and continued only a short time. By the 1st of December he could move the arm freely in all directions, and had a fair grasp of the hand. At this time I determined to remove the fellow joint, which was done in the same manner, except that the incision was made over the olecranon process and also through another sinus. The progress and result of the second operation were in all respects equally as favorable as the first. The boy left the hospital, after which I did not see him, but learn that he since died of phthisis; but that the use of the arms continued to improve till the development of the fatal disease.

To me the case is instructive as it illustrates, as far as it goes, the comparative danger of excision and amputation at the elbow. I do not believe this boy would have survived a second amputation, while the second excision appeared to produce but little constitutional disturbance. However this may be, it certainly indicates that in cases where a choice can be made, excision should receive the preference, unless from some cause the loss of the extremity is but a small factor to be considered.

XXIX. The Orthopedic Treatment of Tubercular Disease of the Knee in Children.

By V. P. GIBNEY, M.D.,
SURGEON-IN-CHIEF TO THE HOSPITAL FOR THE RUPTURED AND CRIPPLED, NEW YORK.

The wording of the title has been chosen with a view to bring before this Society that management of a tuberculous knee which should contribute to the prevention as well as the correction of a

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deformity, and, at the same time, restoration of function when such is possible. I do not come to-day to present any new forms of apparatus, or to bring before this Society any that cannot be employed by the members present. At the outset, then, I wish to disabuse your minds of the idea that orthopedic necessarily means mechanical. Any who will take the trouble to look up the derivation of the term will find that it means prevention as well as correction.

The great advances surgery is making in early diagnosis prompt me on the present occasion to appeal to you on behalf of early diagnosis of diseases in and about the knee. I take it for granted that the average practitioner has learned something of anatomy and physiology. Many I know are familiar with anatomy only as it exists in the dissecting-room, but this knowledge ought to be a sufficient basis for the study of superficial anatomy.

In studying fractures and dislocations, we naturally fix upon certain landmarks about a joint, the presence or absence of which assists us in diagnosis.

It seems to me fully as important that this same knowledge should be brought to bear in our study of diseases which present such constant signs. The fact that the large majority of our patients have two knees instead of one, and the further fact that a chronic disease seldom, if ever, invades both knees at the same time—these facts, I say, place us at once in possession of a means of comparison.

When a case of lameness involving the knee-joint presents, we can easily examine the sound knee with our sight and with our hands, thus familiarizing ourselves with the normal appearance, the normal feel, and the normal function of the joint. At the same time our knowledge of the anatomy of the part will come to us, and we have thus taken the most important steps in securing a diagnosis.

We can now proceed quite intelligently with the knee affected. We have by this time learned something about the history, which, of course, gives us the mode of invasion. Those who have pinned their faith slavishly to the traumatic origin of joint disease will have by this time discovered some particulars of a fall or other injury. Before attaching too much importance to these particulars, it is best to learn definitely the date previous to which the child was not lame. It so happens, many of these cases now under con-

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sideration were "a little lame" prior to the date of the trauma. The teachings of the present day are sufficiently explicit to call our attention, at least, to the osseous origin of what is understood as "white swelling," which is the tuberculous disease mentioned in the title of my paper.

Assuming now that the pathology to which I have just attended is correct, we can readily explain not only the fall, but its influence on the disease itself. An acceptance of this view enables us to excuse the awkwardness and unsteadiness of the limb and give the fall its proper place in the history of the case.

I have made this little digression in order to emphasize the pathology of what is known as common tumor-albus or white swelling. In returning now to the diagnosis, I would have you bear in mind, during the examination of the case, that the early signs must be found in the bone, and in the muscles which take their origin or insertion on the bone under examination.

The large extent of the synovial membrane of the knee enables us to recognize at once the presence of increased fluid. If the membrane be distended, flexion of the knee will give us symmetrical fulness on either side of the tendon of the quadriceps femoris.

The position and mobility of the patella present for consideration. Proceeding thus with our comparative examination, we can appreciate any changes that may have occurred in the superficial parts of the head of the tibia or the femoral condyles. Without going more extensively into the question of diagnosis, I shall content myself with the few hints I have thrown out, and proceed at once with the management of a case of tubercular ostitis of the knee in the early stage—that is, the prearthritic stage.

The strong tendency of the tuberculous foci to be multiple prevents us from adopting prompt operative measures and compels us to rely upon what might be termed expectant procedure. If, for instance, we could feel sure that a single focus existed in the immediate neighborhood of the epiphysial line, we could easily reach this focus and terminate the disease in its inception, but the signs which belong to a single focus belong with equal distinctness to two or more foci, hence surgeons are loath to invade the epiphyses on such uncertain testimony.

Early operative interference, such as trephining, gouging, and ignipuncture, have not been looked upon with favor by the majority

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of surgeons. In my own practice I have pretty uniformly relied upon immobilization and rest as the best means of bringing about resolution. There are very few children on whose knees the plaster-of-Paris bandage cannot be used with advantage. When I say the plaster-of-Paris bandage, I mean the bandage neatly and smoothly applied, made quite thin and finished well at the upper and lower edges.

From a teaching experience of four or five years with this agent, I am fully convinced there is no dressing more abused. Any kind of plaster is regarded as sufficiently good, any kind of material for bandages is regarded as good enough, and excessive weight and clumsiness are too often looked upon as all that is necessary in a plaster-of-Paris dressing. One cannot expect to prevent deformity by work of this kind. Resolution of inflamed bone does not take place under such dressings. If one expects to employ plaster-of-Paris in these early lesions of the knee, he should familiarize himself with its proper application. Waterglass makes a neat dressing, yet this cannot be applied by the novice. If one realizes the gravity of the lesion with which he has to contend, if he realizes that this lesion is a tuberculous inflammation of the epiphyses, he will not only adopt that splint or that dressing which will prevent deformity, but he will hold himself responsible for the maintenance in position of the splint or dressing. If the child is old enough to walk, a splint in the shape of a perineal crutch can be employed and the necessary rest to the joint be secured.

The bone and joint need to be thus protected for two or more years.

If any of my hearers believe that prolonged immobilization is harmful and productive of ankylosis, I will say the testimony is inconclusive, and that, so far as my own experience goes, the real function of the joint can be better preserved by absolute immobilization than by any attempts at passive motion.

I have omitted to mention traction as a means of fixation because of the difficulty of securing continuous traction of the joint in all cases, especially in the hands of one who does not follow the special form of traction apparatus employed. Hence my omission to dwell upon this agent in a communication.

I wish to be eminently practical: I *do* want to emphasize in this place the necessity for a large amount of patience. Because the thickening about the condyle or the ligamentum patellæ does not

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rapidly subside, because the tenderness on handling persists, because reflex spasm on the slightest motion remains an obstinate feature, because the change in contour lasts a long time, it does not follow that a cure is out of the question. A tuberculous process in the epiphysis is just as chronic as one in the lung. Sporadic cases of prompt recovery after operation do not by any means establish rules.

I have myself performed nearly all the operations upon the knee and often with flattering results. At the same time I am thoroughly conversant with the wonderful cures that have been accomplished by expectant treatment. It is the individual case that demands our best surgical judgment. I may be permitted to insist upon the rule, "prevent deformity."

MANAGEMENT OF THE STAGE OF DEFORMITY.—For many reasons we seldom get cases before the stage of deformity has been reached. How to correct these deformities was a problem that confronted me for a number of years. The different splints so well known have failed in my hands to get thoroughly satisfactory results. I have been able to accomplish a certain amount of relief, yet how to retain the good already accomplished has not always been an easy task.

When the deformity is uncomplicated flexion, the management of the case has been comparatively easy. When the element of subluxation complicates the flexion, the usual traction splints, with screw or rack and pinion, are totally inefficient.

I take pleasure in presenting a very simple apparatus which has served me a most excellent purpose during the last eighteen months. My attention was first called to the appliances by Dr. Hector Cameron, of Glasgow. He got the idea from Billroth's clinic. It may present some similarity to a Sector splint;[1] it consists of two tin strips joined by light steel bars and incorporated in a plaster-of-Paris bandage. It is necessary, in applying the plaster, to have the bandage thick in the popliteal space, and to leave uncovered a space just below the patella. A few practical points on the application of a bandage may not be out of place, and they are as follows:

[1] Dr. Stillman, the inventor of the Sector splint, very properly lays claim to the slotted bar of the knee splint, for this is a step in the evolution of the Sector splint. The clamp for securing the amount of extension gained in Dr. Stillman's splint is not employed in the one here described, but cork, which is elastic, serves to retain the extension secured by manual force.

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Have the tin splints fitted well to the limb before you begin the dressing. With your hand or with a pair of wrenches shape the steel bars over the salient points of the knee—place pads of piano-felting or double-faced Canton flannel over the patella, over the head of the tibia, and over the posterior aspect of the thigh a few inches below the perineum. Be sure to get the joints of the splint opposite the articulation.

When the plaster-of-Paris has been applied and before the setting is complete, with a sharp knife make a transverse incision through the bandage filling the popliteal space. Next day the leg can be forcibly extended to the pain limit and a wedge-shaped piece of cork inserted in this popliteal incision. The management of the case is simply this: every few days, or from day to day, according to circumstances, make a little extension and retain what has been gained by means of the cork.

If there be subluxation, the steel bar passing from the fan-shaped tin pieces intended for the thigh should be curved upward and have a long slot through which the screw can pass, thus enabling one to change the centre of motion. We gain thereby a better purchase on the subluxated tibia, the arc of motion is changed, and it has been a very satisfactory procedure. If knock-knee exists, the splints can be placed on the anterior and posterior aspects of the limb and the cork inserted in the opening on the outer side.

Clinical cases present various degrees of resistance and the time employed to correct the deformity varies. If it is important to hasten matters an anæsthetic may be employed, the limb forcibly stretched, cork inserted, and the patient placed in bed for a few days.

The most important feature in the management of the cases is the retention of the good position obtained, and for this purpose I apply a solid plaster-of-Paris bandage, and in order to protect the joint use the Thomas knee splint, with which most of you, I presume, are familiar. It consists of two rings with bars running parallel to the limb, the upper ring fitted to the thigh and well padded for a perineal crutch. A three- or four-inch-high shoe or patten on the sound foot completes the apparatus.

This is worn for several months after tenderness and infiltration have subsided, when the test for soundness of the joint is employed as follows: Remove all dressings and let the patient use the limb cautiously for a week or more, and if range of motion has increased

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during this time the limb may be regarded as sound, otherwise recourse must be again had to the apparatus.

Abscesses are managed according to circumstances, and so long as they seem to be harmless are not interfered with. Should they present troublesome features they are opened and treated antiseptically, the foci of disease are scraped and gouged, and arthrectomy more or less complete is resorted to. The use of the splint after the operation is very essential. The above course of treatment has had with me most gratifying results, and excision is seldom necessary.

DISCUSSION.

Dr. A. M. PHELPS, of New York: I fully agree with Dr. Gibney that immobilization should be the first law in the treatment of hip or any joint disease. Spasm of the muscle produces abnormal pressure between the joint surfaces and is an element of distortion, and any form of splint that will not combine extension with fixation will not immobilize the joint. In the use of plaster-of-Paris the limb should be enveloped as high up as possible and down to the ankle-joint. If the ankle is not included, owing to the tapering of the limb it will slip in the cast, and we will have from spasmodic action of the hamstring muscles pressure between the joint surfaces which will produce intra-articular disease. The splint of Thomas is a most excellent one, but should be used in connection with an extension apparatus. This of Gibney is a certain modification of Dr. Stillman's of New York, and would answer the purpose. But where flexion has existed for any length of time the ligaments on either side of the joint are shortened, and it would be difficult to overcome this deformity with that apparatus. Straighten the limb under chloroform, cutting the hamstring tendon if necessary, and then, if you wish, put up the limb in plaster-of-Paris. A modification of Dr. Sayre's splint I believe to be one of the best to use, but it costs more than all patients can afford to pay. I have made a cheap splint, which I here present; it can be applied with Thomas's knee splint if desired. I use them together, this one to overcome the spasm of the muscle, to fix it to a certain extent and to overcome the trauma which is induced by the spasm. It is simply a Sayre splint without the use of the invaginating bars. The rings are fixed, and then between these rings two lines of extension are made by sliding the rods and by applying the system of bandaging across the femur to hold it back and across the tibia behind to hold it back, fixing the joint.

Dr. BERNARD BARTOW, of Buffalo: The importance of early diagnosis of the disease to which Dr. Gibney has directed attention in his

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paper cannot be overestimated. The development of the pathological conditions commonly characterized as "white swelling" is the result, in large measure, of neglect to employ restraining treatment at a period the most favorable for retarding the extension of the disease—*i. e.*, in the early stage of the epiphysitis. That there exists a natural tendency on the part of the early lesion, even when it is of tubercular origin, to undergo resolution when relieved of irritation of an extraneous nature, is abundantly proved, I think, by the frequent occurrence of resolution in the more advanced forms of the disease following the application of efficient restraining measures to the affected joint. My plan has been to employ thorough and complete restraint of the joint at the earliest period practicable for making a diagnosis. Extension by weight and pulley is applied for the correction of flexion and subluxation, and the leg restored if possible to a position of full extension previous to fixing the joint in a splint. Subcutaneous section of the hamstring tendons is made when the flexion is of a severe grade; this measure materially shortens the period necessary for the correction of deformity by extension. A plaster-of-Paris or leather splint having been applied to the limb, a high shoe is placed on the foot of the healthy limb, and the patient permitted to walk with the aid of crutches or a wheel crutch. I disregard the plan of continued traction for the purpose of preventing muscular spasm, for the reason that when the limb has been secured in the above manner the flexor muscle can exert no degree of force that would be sufficient to cause intra-articular pressure of a degree that would excite spasm of the muscles. I have never known of exacerbations of pain from the latter cause during the employment of the foregoing plan. When it is desirable to have the patient dispense with crutches I substitute Taylor's hip splint, maintaining fixation of the joint by traction upon the leg Intra-articular pressure is avoided by the interposition of the foot-piece of the splint, the patient under no circumstances being permitted to bear his weight upon the foot. No method of treatment perfectly fulfils the conditions of treatment which seeks to counteract, by continuous extension, the effect of bearing the weight upon the foot.

Dr. JOHN RIDLON, of New York: There are some cases where the muscular spasm is very marked, and where in my experience plaster-of-Paris extending only down to the ankle and only up to the perineal line will not prevent deformity of the joint. I have seen cases where the spasm was so great that, even with the patient in bed, plaster put on in that way would cut into the flesh at the upper and lower margins of the splint in spite of every care. The anatomical conformation of the parts shows us that in order to immobilize the muscles that move the knee-joint, we must immobilize the hip-joint and the ankle-joint.

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If a case needs to be forcibly straightened under plaster-of-Paris, I should greatly favor carrying the plaster from the toes to and above the pelvis.

As regards traction apparatus my experience has been more extensive than with any other form of apparatus. I believe that as a walking apparatus it is a failure. I do not know of any traction apparatus which will separate in any degree the articular surfaces, or that can be depended upon to relieve the muscular spasm in a bad joint when the patient is walking around. So long as there is spasm sufficient to flex the joint, the patient should be kept in a horizontal position. The involuntary muscular motion incident to locomotion will counteract, in my opinion, all the good work of traction apparatus and will delay the favorable result in many forms of fixation apparatus. When once the muscular spasm has subsided, with a proper and sufficient fixation apparatus, so arranged that no weight comes upon the joint, the case will generally progress favorably; but great patience must be had on the part of the surgeon and patient. A case of knee-joint disease that has been cured within a year and a half or two years is seldom seen; cases are more apt to run on three, four, and even five years.

Dr. GIBNEY: While I approve of traction as a means of fixation, I did not think it sufficiently practical to bring before the Section; the skin and muscles move so freely on each other, and the surface on which to apply the adhesive plaster being short. As a matter of clinical experience you do not get protection enough from it to prevent irritation, and hence I do not rely on traction ordinarily. I think the question of articular contact as productive of spasm is still open; it is a theory that by some has been abandoned. We regard the spasm as derived from the focus of disease near the epiphysial line. The spasm is reflex, and a trauma that is often very slight will excite this action.

This little splint I use differs somewhat from the splint of Dr. Stillman. It is an appliance long used by Billroth in his clinic, and also by some Glasgow surgeons, so that I did not think it necessary to raise any question of priority. It is an old splint.

I quite agree with Dr. Ridlon as to the necessity of keeping the patient in bed under certain circumstances, but to do so as long as reflex spasm sufficient to produce deformity exists is, practically, through the course of the disease. To confine a little child motionless in bed for many months will not give as good results as using a portable splint.

I think Dr. Ridlon is also extreme regarding the plaster dressing. It is not easy to get a continuous bandage about the ankles, about the knee, and around the hip, especially in the case of a thin child with the salient points very prominent; you get excoriations and abrasions. It is impractical also in young children, in diapers, from soiling of

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the plaster. Absolute immobilization cannot be secured, but enough can be obtained to answer all ordinary purposes. I think that with the Thomas splint, on which the patient walks, the leg and foot produce enough traction to secure sufficient fixation at the hip. In this splint we have about the best form of appliance for managing this obstinate disease.

XXX. A Brief Consideration of the Present Surgical Treatment of Non-strangulated Hernia.

By W. B. De GARMO, M.D.,
INSTRUCTOR IN CLINICAL SURGERY AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

THERE has been within the past two years rapid advance in the surgical treatment of non-strangulated hernia—advance in securing for the patient increased safety, and advance in the ultimate results obtained.

In the necessarily brief consideration of a subject so extensive, only the merest outlines can be treated of, and everything but a condensed statement of the facts as they appear to the speaker must be excluded. The advisability of strict asepsis and antisepsis, before, during, and after the operation for the relief of hernia is so universally admitted by all operators that more than passing mention is unnecessary. Vital points are those, however, which relate to the management of the hernial sac, of the canal, of protruding omentum, and as to whether the wound shall be treated by the so-called open method, or an attempt be made to heal it by first intention. It is of the first importance, also, to have a clear understanding as to what class of cases we are justified in recommending such an operation.

The following propositions I desire to bring plainly and forcibly to your notice at the outset:

1st. That hernia, as met with in every-day practice, presents an almost infinite variety of forms, sizes, and conditions.

2d. Doctors A, B, and C are the authors of operations for the cure of hernia, each adhering strictly to his own, using it upon every case that comes, be the hernia small, large, reducible or irreducible. Other operators, having no operation of their own, try first the operation of A, until discouraged by unsatisfactory results,

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then abandon it entirely and adopt the method of B upon all cases that present, and so on through the list.

The first proposition will, I think, be admitted by all having had experience; the second is proven by the literature of the subject.

At the present moment we have, from which to choose, operations bearing the names of Banks, Macewen, Barker, McBurney, and many others, that are being used by various operators in just the manner described.

The point which I wish particularly to emphasize in this brief paper is, that we should rather select from these operations one suited to the case in hand, than to follow one method for all cases.

I do not intend to rehearse the details of the methods of different operators, as they have in most instances been extensively published, but shall instead consider each important step in an operation for the cure of hernia, in about the order that it would naturally present itself.

Shall we open the hernial sac? This is almost the first question to decide when beginning an operation for hernia. Mr. Bryant, of London, has recently said[1] that in opening the sac the risk was almost quadrupled, but still deemed the operation incomplete without so doing. Few American surgeons are inclined to admit that so great an amount of risk is added by the opening of the sac, and many English and French surgeons believe that not only is it free from danger, but that it is their duty in every case.

It would seem that the condition and history of the case should be our guide in every instance. If the operation is upon a small and recent hernia, it is fair to assume that no pathological changes have taken place in the interior of the sac which demand our attention. On the contrary, in an old or irreducible hernia the importance of opening the sac in every instance is well shown by the case recently reported by Dr. D. P. Allen, of Cleveland:[1]

"The hernial sac was opened, and, though before operating we had apparently returned the intestines to the abdominal cavity, it was found that many feet of collapsed intestine remained in the sac—the intestinal contents alone having been returned."

If Macewen's operation had been done on this case without opening the sac, undoubtedly the patient's life would have been sacrificed.

[1] British Medical Journal, December 1, 1888.

[2] New York Medical Record, vol. xxxiv. p. 141.

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In the opinion of the speaker the sac should be opened in all except the most recent and smaller herniæ, and it is believed that under careful antiseptic precautions very little, if any, additional risk is incurred. Those who are timid about opening a cavity which communicates with the abdomen, may avoid this supposed risk, in a measure at least, by putting a temporary ligature about the neck of the sac just below the external ring.

The contents of the sac. If the contents of the sac should prove to be bowel, irreducible from adhesions to the sides of the sac, the greatest care will be needed in its separation, and when the union between the two surfaces is firm it is better to cut out that portion of the sac united to the bowel, leaving it attached rather than risk injury to the intestine.

Masses of protruding omentum should, in almost every instance, be removed even though reducible, as they otherwise become a most potent cause of recurrence of the hernia. Amputation of omentum has been one of the most dangerous features of these operations, and this on account of secondary hemorrhage. This is avoidable by spreading the omentum out and tying each vessel that bleeds, instead of tying the whole stump with one ligature. Mr. Pepper[1] has lately recorded a case where the ligature slipped from the stump of omentum, and laparotomy became necessary to secure the bleeding vessels. Stitching the stump into the canal is almost certain to be followed by a speedy return of the hernia; but this method is fortunately falling into disuse.

The treatment of the sac brings us to another important step in the operation and to a subject upon which many operators have many opinions. Only upon one point do they agree, and that is, that the canal should be freed from its presence. Ball and Stokes dispose of it by "torsion." Cohn, Banks, McBurney, and many others believe in complete extirpation. Barker divides it at its neck, stitching its stump to the internal ring, leaving the fundus *in situ*, while Macewen utilizes the sac in the construction of an intra-abdominal pad at the internal ring.

It seems, to the speaker, just as evident that each one of these methods has its own special province, as it does impossible that any *one* would properly fulfil the requirements of all cases. It does not appear rational to dissect out an enormous hernial sac the size of

[1] London Lancet, 1888, ii. p. 1066.

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one's hat, fold it up, and put it into the abdominal cavity, where it is certainly a foreign body, and yet I have seen this very thing done in following out Macewen's teachings. The danger of *torsion* in just such a case has already been shown in the case of Dr. Allen.

In the enormous hernias Barker's plan is certainly the best. Open the sac just below the external ring, draw it down as far as possible, and, after making sure that it has been freed from its contents, ligate it with silk over the end of the finger, which should occupy the neck of the sac until it is closed off from the abdomen. The sac is now divided below the ligature, when retraction of the stump will carry it high up in the canal to the internal ring. The fundus of the sac may be left undisturbed, without the least fear of anything more serious than a hydrocele, or, if easily removed, may be stripped from its attachment.

In recent small herniæ, where the sac is thin and presents the characteristics of normal peritoneum, torsion forms a convenient, safe, and efficient mode of disposing of it. It is in hernias varying in size from that of a hen's egg to one's fist, and especially in such cases where the sac is easily separated from its surroundings, that Macewen's method of treating the sac is particularly well suited.

The greatest difference of opinion prevails regarding *the treatment of the canal;* and while Banks and his followers believe that if the sac is removed it is unimportant what is done with the canal; others are equally strong in the opinion that in its narrowing or hardening lies the essential part of the cure.

The latest procedure that is attracting attention on this side of the water is that of McBurney, which consists briefly of splitting up the anterior wall of the inguinal canal to the internal ring and filling the wound with iodoform gauze, so that repair must be by granulation. We have, then, a new anterior wall composed wholly of cicatricial tissue, and upon the permanence of this tissue must depend the final cure or failure. While the results of this method during the short time that it has been in use are certainly very encouraging, the history of scar tissue in other parts of the body leads to the belief that although during its first year or two of existence it is the strongest, eventually it becomes weaker than the surrounding normal structures. It seems certain that the operation must either prove a success or result in a failure that would leave the patient in a worse condition than before its performance.

For this reason, and on account of the long confinement to bed

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necessitated by the slow healing process, I should prefer Barker's method of dealing with the canal, where at least no good tissue is destroyed. In Barker's operation the anterior wall of the canal is narrowed by heavy black silk sutures applied over its whole length, and the wound is healed by first intention, leaving the stitches permanently in the tissues. The superficial tissues are closed at once; unless symptoms arise demanding it, the dressings are not removed for ten days, at which time complete union will frequently be found to have taken place. In many instances no provision for drainage is necessary, but in large hernias it is best to carry the drainage-tube through the bottom of the scrotum, closing the entire upper wound by first intention.

The final question for consideration is regarding *the after-treatment of the case.* Here again, we have the two extremes: some believe that support or a truss should never be worn, and others that they should always be applied. *Between* those two extremes would appear to the speaker the correct practice. While it is unreasonable to expect that newly formed tissue will stand the strain put upon it in the retention of an enormous hernial protrusion, it is certainly unnecessary to apply a truss after an operation upon a very small hernia.

In conclusion, my views on the surgical treatment of non-strangulated hernia might be summarized as follows:

1st. Small recent hernias may be best treated by torsion of the sac, narrowing of the canal by Barker's method of stitching the anterior wall of the canal with silk and closing the wound by first intention.

2d. Medium-sized hernias, where the sac is easily detached from its surroundings, should be managed after Macewen as regards the sac, but after Barker as regards the canal.

3d. In very large hernias it is best to ligate the neck of the sac and cut it off, reducing the stump and leaving the fundus *in situ*, unless easily removed. In fact, doing the whole operation as taught by Barker.

In the first class of cases I would not use anything but a bandage after the operation, but in the second and third classes of cases I should use a light truss, with its pad applied *above* the canal, where no pressure would be made upon the cicatricial tissue resulting from operation.

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DISCUSSION.

Dr. L. S. PILCHER, of Brooklyn: The question of vital interest in the operation for the relief of hernia is, having exposed the sac, shall we open it? There may be conditions hidden within it, which the closest examination will not enable us to realize, that will attend the opening it with the gravest dangers. But if we are reasonably sure from the conditions of operation that there is no danger of septic infection, I take it that there can be no hesitation, on the part of any operator, in opening it. As to the further disposition of the sac and its contents, while it is true, as stated in the paper, that the indications of each case should govern us and that we should not follow any one method, at the same time we ought to place due consideration on the fact that the operations of Macewen, Barker, McBurney, and others have been repeated by them in a very large number of cases of all kinds, and they are able to give us the possibility of deciding in what cases their particular operation is the most useful.

I saw recently a strangulated hernia in a man, eighty-four years of age, the hernia having existed since early life. Upon opening the sac it was found that the strangulation had taken place in a diverticulum from the main sac. This relieved, the contents of the main sac were easily restored to the abdominal cavity. Then the sac was drawn down, ligated at its base, cut off and the wound permitted to heal by granulation after the method of McBurney. Recovery followed, but the prolonged confinement to bed incident to the period of healing was a serious tax upon his enfeebled powers, and I am satisfied that some other method which would have been less tedious would have been better for the patient.

Within a few weeks a second operation in an octogenarian was done by me upon an irreducible femoral hernia in which symptoms of strangulation had supervened. I opened the sac; drew down and tied off a mass of adherent omentum which it contained; drew down the emptied sac, tied it with strong silk as high up as possible and pushed up the stump into the abdominal cavity; then with layer after layer of catgut sutures brought into close apposition all the structures that had been exposed by the dissection. Firm union by first intention and rapid recovery was the result.

A third case illustrates an entirely different class—that of a boy of seventeen years—on whom a typical Macewen's operation was done for the radical cure of hernia. The healing was by primary union; the course of the case was uneventful, and he returned to his work in sound condition at the end of a month.

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Dr. WILLIAM HAILES, of Albany: In my own work I have found simple asepsis better than disinfectants; absolute cleanliness of operator, instruments, and all manipulation. Disinfectant substances may all prove irritating.

Dr. De Garmo's reference to the removal of omentum brings to my mind an operation of my own in the case of an immense omental hernia, the largest I have ever seen. I transfixed the pedicle and tied it each way, but even then it made a large tie, and although the best results followed, I think in a similar case I should prefer to ligate each individual vessel to guard against secondary hemorrhage.

Dr. J. P. CREVELING, of Auburn: I have been free to open the sac, and I do not believe there is any special danger, with proper precautions from cutting into that cavity. It is a maxim in surgery that the union of tissues of like structure is less yielding and less liable to separate than that of unlike, and by virtue of this we may usually expect a firm union of the parts. It has been my plan generally to scarify or scrape the sac and sometimes the ring, believing that by so doing the amount of plastic material exuded is increased and the union made more secure. Uniting the wound by first intention shortens the period of convalescence and, as far as my experience goes, the result has been equally as satisfactory as by granulation. As to returning the omentum, I now recall cases where a large part of this organ was pushed back into the abdominal cavity and as yet there has been no return of the hernia, and I am inclined to believe that such return does not very largely compromise the success of the operation.

Dr. DE GARMO: I agree perfectly with any gentleman who is in favor of opening the sac freely. I have no hesitation in doing it in any case. I know that many general practitioners do hesitate; otherwise I should have made it more forcible in my paper. An operating surgeon can with greater safety open a hernial sac than a practitioner who is doing surgery occasionally. To those who are afraid of opening into the abdominal cavity in opening the sac, I would say that it may be avoided by putting a temporary ligature around its neck, immediately below the external ring. This closes the sac from the abdomen while you examine at leisure its condition and contents through an incision made below the ligature.

Regarding Dr. Hailes's remarks, I think there is more in asepsis than in antiseptics. I am becoming more and more a believer in absolute cleanliness, and the one to five thousand solution of bichloride is the strongest I ever use, and many times not that.

I do not think that where we have a large neck of omentum it is ever safe to tie it in one mass; the shrinkage, due to the pressure of the ligature during the first twenty-four hours, will allow it to slip off. If

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you tie a small stump of omentum, I should advise its being stitched through below the ligature, but it is better to spread it out and tie each bleeding vessel before it is returned to the abdomen.

XXXI. On the Treatment of the So-called Perityphlitic Abscess.

By ROBERT F. WEIR, M.D.,
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The subject of the origin and treatment of perityphlitic abscess has been largely dwelt upon within the last few years in the various medical societies in our principal cities, and notably quite recently by the leading physicians and surgeons in the important medical centres of Boston and Philadelphia. Though nothing specially novel can be presented in the following remarks, yet reiteration of the principal views in connection with this subject will be of importance, and especially so, it is thought, to the general practitioner. The latter will find, as his experience grows, that there are apparently two classes of perityphlitic abscesses, one of which progresses with few alarming symptoms, and develops into an abscess which either opens spontaneously, or which he, if he has recognized from the usual symptoms the presence of pus, opens with the knife, whereupon the patient, as a rule, promptly gets well. Again, a second form presents itself with more or less sharply marked symptoms of peritonitis, with the formation subsequently of a tumor in the region of the cæcum, which in due time, like the preceding one, resolves itself into an abscess. He may also meet cases in which a fulminating peritonitis destroys life in a few days. The consideration of this latter condition of affairs can, however, be laid aside for the present.

The practitioner will find it difficult to reconcile to himself that all three of these varieties have a common origin. If he consults his text-books he will learn that there are two distinct varieties therein spoken of. Some of these authorities he refers to will say that the inflammatory action is from the beginning in the connective tissue outside the peritoneal cavity behind the cæcum; and others that the inflammation has begun in the peritoneal cavity from

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a lesion of the cæcum or appendix and has gained the connective tissue outside the peritoneum through a perforation of the adhesions gluing the visceral and parietal peritoneum together; and, finally, the latest works on this subject will tell him plainly and positively that the inflammation and abscess are from the beginning in the peritoneal cavity, and that the pus only approaches toward the surface by a natural destructive process common to abscesses generally. Among the most noted names that can be adduced in favor of these abscesses originating in the connective tissue posterior to the cæcum, are those of Bamburger, who, in 1853, stated that this view was a correct one, though he admitted that the peritoneum might be secondarily involved and so give rise to a circumscribed or general peritonitis. Oppolzer likewise, in 1863, remarked that perityphlitis meant an extra-peritoneal inflammation of the connective tissue behind the cæcum; he, however, also said that it was difficult to differentiate the diagnosis between the abscess thus resulting and that coming from ulceration and perforation of the appendix vermiformis.

It is hardly worth while to go further into a citation of the various writers who have supported these different views concerning the cause of a perityphlitic abscess. The recent articles of Fitz and others interested in the subject have amply demonstrated the incorrectness of the views of the observers first named. It is now clear to every one who has given attention to this subject that all these abscesses originate in an inflammation, simple or gangrenous, or in a perforation, and more commonly it is the latter, of the appendix vermiformis.

That the abscess might be due to a perforation of the cæcum is conceded, though such perforations are found at post-mortem examinations to be commonly caused by an abscess opening into the bowel or to necrotic ulceration from an over-distended colon due probably to a stricture further down the intestinal tube. Cæcal perforations of any kind are, however, very rarely met with.

While this prominent fact of the inflammation or perforation of the appendix as a cause of perityphlitic abscess has now been admitted by most surgeons, yet not a few still cling to the belief that the perforation takes place in such a way that an opening, small in size, is made directly from the appendix through the parietal peritoneum into the subperitoneal connective tissue behind the cæcum. Two serious objections have been raised to this belief. The first

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objection comes from the recent observations of Mr. Treves in respect to the peritoneal covering of the appendix and cæcum itself. It is now the common property of the profession, through this surgeon's dissections, that these two parts of the intestinal tract are entirely covered by peritoneum. This is not a new discovery by Mr. Treves. He has only proclaimed it loudly and at a most opportune time.

Bardeleben, in 1849,[1] from an examination of one hundred and sixty cadavers, asserted as a certainty that the cæcum is completely surrounded by peritoneum, and lies so freely movable in the peritoneal cavity that it can be pushed upward and laterally. He, moreover, said at this early period that it follows, if this is corroborated, that the definition of a perityphlitis as an inflammation of the connective tissue of the posterior surface of the cæcum cannot be justified.

Luschka,[2] the distinguished anatomist, in 1861, declared that in the fœtus the peritoneum surrounds entirely the cæcum and appendix, and that this is a usual thing, and is, as a regular rule, to be found in post-fœtal life. Moreover, Luschka states that one cannot open the cæcum and appendix without opening the general peritoneal cavity; and he, too, remarks that perityphlitis, as it was then commonly regarded, was an impossible condition, unless there had been previous adhesions.

Corroboration of these views has been made by Dr. Richardson, of Boston,[3] and I have myself in thirty autopsies had the position of the cæcum and appendix carefully observed by Dr. Ferguson, pathologist to the New York Hospital. His report is to the effect that the cæcum and appendix were covered entirely by peritoneum in twenty-eight instances, the cæcum only partially covered in one instance, and it was not stated in another. It may be mentioned as a matter of some interest in this connection that in sixteen of the cases the appendix rested beneath and posterior to the cæcum. Treves has found this to occur in eighteen per cent. of the cases observed by him.

While ranging myself with those who strongly believe in the

[1] Ueber der Lage des Blinddarms beim Menschen. Arch. f. Patholog. Anatomie u. Physiologie, Bd. ii. S. 583, 1849.

[2] Ueber der peritoneale Umhülling des Blinddarms. Arch. f. Path. Anat. u. Physiol., Bd. xxi. S. 285, 1861.

[3] Boston Med. and Surg. Journ., February, 1888.

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origin of these abscesses in an inflammation or perforation of the appendix vermiformis, yet I must confess from the clinical standpoint it is rather a difficult matter to prove this. Out of an experience of twenty-six abscesses of this sort that have been opened by me, in only some eight of them have I been able to recognize that the inner wall of the abscess was made up of loops of intestine bound together by adhesions. This experience has come to me, however, only within the last three or four years. I believe had I fairly tested this question in my earlier cases this number would have been increased, but it must be clear to every one that it is a test that cannot be applied with much thoroughness on account of the possible risks connected therewith. In fact, I do not advise that the matter should be determined in this way. I have elsewhere demurred to such explorations, or even to washing out the cavity of the abscess after it has been opened, with liquids, plain or medicated, lest the limiting adhesions of the peritoneal boundaries of the abscess should be damaged, and the patient's safety jeopardized. I believe, moreover, and this my observation confirms, that in many cases it is utterly impossible after the abscess is opened, and it is explored gently and judiciously by the finger, that the surgeon can determine whether the abscess is external to or within the peritoneal cavity. I do not think that evidence of a negative character thus obtained is worth anything at all in settling this question.

I have, therefore, been led to see if a solution could be arrived at by considering a large number of autopsies of this affection. I have taken pains to gather indiscriminately from the *Index Medicus* 100 cases of perityphlitic abscess, where an autopsy has been obtained, and on analyzing these reports have obtained the following result. Out of a total of 100 autopsies, I found that the appendix was perforated 84 times; that it was inflamed and not perforated 3 times; that the cæcum was perforated 4 times, 2 of which were due to ulcerations proceeding from without inward—in other words, from abscesses opening into the cæcum; and in 9 cases the condition of the cæcum and appendix was not stated.

As to the site of the abscess, which was an important fact to be ascertained in these 100 autopsies, 22 of them showed intra-peritoneal circumscribed abscesses; 13 intra-peritoneal abscesses and general peritonitis; 57 general peritonitis without abscess; and in but 4

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instances was there an extra-peritoneal abscess; in 10 the condition was not stated.

Now this is a very strong point in favor of the propositions with which I have started: first, that these abscesses are invariably due to inflammation or perforation of the appendix vermiformis; and second, that, as a rule, the abscess itself is developed within the peritoneal cavity. Not only out of the 100 cases were there only 4 extra-parietal abscesses, showing the rarity of this form of abscess, but also it is to be remarked that in all of these 4 cases there was a *large* communication between the intra- and extra-peritoneal portions of the abscess. Putting it in a different shape, it can be said that in no instance out of the 100 autopsies did there exist the gluing together of the appendix with the parietal peritoneum, and a primary escape of the contents (fecal or otherwise) of the appendix into the connective tissue by boring through this adhesion, and by the subsequent development of pus in the extra-peritoneal tissues.

There was another fact developed in connection with the examination of this collection of autopsies which must be of great importance to the physician, for he it is who sees the cases in their inception. It is this: that in only one case was the cæcum more than ordinarily filled with feces. Now, if there is anything else that is more firmly fixed than another in the practitioner's mind it is this: that the majority of troubles in this region are due to an accumulation of feces in the cæcum, and it is a rule almost prevalent in the medical profession that a purgative should initiate the treatment of these cases. It must be conceded that if it be correct, or if it be presumably correct, that the inflammatory conditions are most likely to originate from a perforation of the appendix, then this fact of itself should preclude the administration of a purgative —of even an enema; and much more would this direction become an absolute one when it is now taken into consideration how rarely stercoral accumulations are met with in this affection. Even catarrhal conditions as factors in the disease are scouted at by Treves.

The facts presented by With are likewise very convincing in this direction. This observer presented, in 1880, a series of 30 cases treated in their beginning by himself, or by his colleagues, after the ordinary method, with the result of 40 per cent. of deaths. In 1884 he again[1] reported a series of 50 additional cases similarly

[1] La Péritonite appendiculaire. Copenhagen, 1884.

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met with, of which only 16 per cent. died. His treatment, however, was entirely different. Purgatives, rectal injections, etc., were sedulously avoided, opium was administered as soon as the disease was encountered, and the patient immobilized as far as practicable, urination and defecation being accomplished with the greatest care and freedom from motion. I can confirm myself, in two instances, the good results of this strenuous treatment instituted in the very beginning of the disease; that is to say, when it may be inferred that the perforation is about to occur or has just taken place.

With these facts in hand, the way is before us to appreciate the proper treatment for these apparently varying affections. Indeed, the aim of this paper, and the aim, I take it, of all the papers entertaining this view that have been published in recent years, is to force upon the mind of the profession, both medical and surgical, the important fact of the *origin* of this disease, because, as With himself states, with this kept constantly in view a proper treatment is more likely to be followed; either the medical one of immobilization, or, if this should prove of no avail, that the surgeon should stand, knife in hand, ready to use his instrument as occasion may demand.

I do not intend by this picture to give rise to the idea that in every case surgical interference should be immediately resorted to. I have learned by experience that many cases of moderate severity do not go beyond the stage of plastic exudation and subside without abscess; also, that some few abscesses disappear by a presumed opening into the bowel—not always to be proved. I know that delay may be safely resorted to, from the progress of some of the twenty-six cases of operations which have occurred under my own charge, wherein a comparatively late incision was made. This occurred in nearly all of them, not, however, from my own choice, but because they were either hospital cases that came late under my observation, or they were seen in consultation in private practice after the disease had already existed some time. In this number of cases only one death occurred, and that from an abscess of tubercular origin and in a phthisical patient in the last stages of his disease. Yet though all these, save that one, recovered, a good many of them had a very narrow escape from death by reason of the extensive suppuration, or the threatened sepsis that followed the retention of pus in a large, irregular cavity, or, in some cases, by the prolonged fecal discharge.

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I do not know that the lateness of operation influenced this latter point much. Still, the statistics afforded by Noyes, quoted elsewhere,[1] bear out the conclusion that the earlier the safely progressing or subacute abscesses are opened, the better are the chances of the patient. Out of 100 cases Noyes found that in 88 operated upon after the eighth day 17 per cent. died, and of 12 operated upon before the eighth day, 8½ per cent. only died. There is also a risk that the patients carrying these slowly progressing abscesses are exposed to, and it is that the abscess itself may burst into the peritoneal cavity. In 67 cases collected by Dr. Bull, 8 burst into the general peritoneal cavity; and in 12 collected by With, 6 terminated in the same way. It will be remembered that, of the 100 autopsies cited above, in 13 of them there was a limited abscess associated with general peritonitis. The latter was believed, in many of these cases, to be due to a giving way of the soft adhesions circumscribing the original abscess. Furthermore, there are the risks of portal phlebitis, with external or internal suppuration of the liver, and pyæmia to be encountered the longer the pus is retained within the system.

Therefore the rule has been laid down, and in my judgment it is a wise one, here as elsewhere in the body, that as soon as pus is recognized it should be evacuated. Whether a surgeon should resort to measures for determining the presence of pus, such as the use of the aspirating needle or the making of an exploratory incision, will in any given case depend upon the condition presented by the patient. In other words, if the disease be acutely progressing, the surgeon will at once be called on to decide whether the patient will incur most danger from the progress of the disease or from operative interference.

In the case of a slowly progressing tumor without any or with slight peritoneal symptoms, or with those which may have passed away, or ameliorated within twenty-four hours, one need not always feel obliged to hasten to determine whether pus is present or not. The likelihood of there being simply some exudative fibrinous process is quite as great. I have myself been accustomed to keep such patients under careful observation for three or four days, and bide my time until some elevation of temperature, some chill or sweat-

[1] A Plea for Earlier Operation in Perityphlitic Abscess. Weir: Medical Record, June 11, 1887.

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ing, or some increase in the size of the tumor indicates that more than such an exudation is present.

I am sometimes compelled to take this course in the earlier days of attacks of this sort, even when unwilling to do so, by the wishes of relatives, or by that more commanding objection, the reluctance, positively expressed, of the attending physician to consent to the employing of surgical measures. I have so far not been able in these milder cases to operate earlier than the fourth day, though my inclination leads me more and more to diminish the period of delay. In those cases, however, where there are decided symptoms of peritoneal involvement over a considerable area, and after such marked symptoms have had a duration of twenty-four hours without any subsidence and are associated with the concomitant symptoms of vomiting and elevation of temperature, then I believe we are justified in interfering without further delay, whether a tumor be present or not. If a tumor, however, does exist, then the question of the advisability of aspiration may be raised, and if decided on this may afford another evidence of the necessity for an immediate operation.

The value of this means of exploration is more commonly realized in those cases where the disease has existed more than forty-eight hours. The needle is usually introduced at a point just over the site of the appendix—that is to say, almost an inch and a half above and nearly the same distance inside of the anterior superior spinous process—and is then carried backward or downward toward the appendix; or it may be thrust inward, and somewhat downward at a point just above the middle of the crest of the ilium, hoping in this latter direction to detect an abscess that may run upward in the right dorsal gutter, and which is erroneously spoken of as being extra-peritoneal in character or of a peri-nephritic location.[1]

I may insert here (as it has previously been omitted) in this connection, that in the one hundred autopsies referred to in the early part of this paper there were seven instances where abscesses had formed in this region, *all within the peritoneal cavity*, and that in two of them purulent matter had advanced as far as the posterior part of the liver, being limited internally by adherent intestines. Individually I believe that the abscesses of perityphlitic origin which

[1] A case (read as this proof is corrected) has recently been reported by Coupland in the British Medical Journal, March 23d, where a perityphlitic lesion had caused a subdiaphragmatic abscess.

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are here found are located primarily, if not during the whole course, in the peritoneal cavity.

Concerning the usefulness of aspiration it must always be kept in mind that, while its employment may reveal the existence of pus, a failure to draw this out through the needle does not prove that pus is not there. Its use, moreover, is attended by some slight risk. When employing it in cases where a tumor was only suspected or could not be clearly and definitely made out, the thought has often come up to my mind that the point of the needle might perhaps perforate a distended bowel. This probably is not of any great matter unless the distention exists to a considerable degree, but the possibility of its doing damage to a normally situated or to a displaced iliac vessel, vein or artery, has often occurred to me. In order to avoid the risk of an extravasation of fetid pus that may come on from this exploration, into the peritoneal cavity, or along the track of the needle through the muscular tissue of the abdominal wall (the occurrence of which I have demonstrated in two instances), I prefer always to follow the revelation of the presence of pus by the needle by making the required incision at once.

I think in our present status that it will go without saying that in those instances in which there are signs of spreading or purulent peritonitis (even though no tumor is recognized in the iliac fossa, either by the ordinary examination or with the patient under anæsthesia) immediate laparotomy is demanded from the nature of the case, provided the general condition of the patient is not too much weakened by the practitioner's delay.

In the first-named variety of abscesses—the milder form of the disease—the incision can, as a rule, be made over the most prominent portion of the tumor; or, in general terms, parallel to Poupart's ligament and running along its outer part and the anterior portion of the crest of the ilium. If the abscess runs further backward the incision is carried in that direction also. In some few instances, as in the surgical treatment of a supposed circumrenal or hepatic abscess, the incision must be made vertically or obliquely in the space between the crest of the ilium and the ribs, or in the subdiaphragmatic form, along the ribs, or possibly through the pleural cavity itself. But in the ordinary cases where there are evidences of spreading peritonitis with or without the presence of a tumor, it is much better to make a tolerably extended incision along the outer half of the right rectus muscle, the upper end of which should reach

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to the level of the umbilicus. After the muscular layers are divided the surgeon can readily recognize when he comes to the perineum. If the tumor is a large one, which is rare in the early stage of the disease, he may now see the evidences of œdema of the extra-peritoneal tissue, or even find the matter has broken down this membrane and has invaded the abdominal walls, but usually nothing is visible till the peritoneum is cut through, when one of three conditions may present itself.

First. A mass of œdematous, opalescent exudation of varying thickness, sometimes half an inch or more in depth, may be observed. On cutting through this he may come down into an abscess cavity, large or small. This condition is likely to be found in the more slowly progressing troubles of the vermiform appendix, and it particularly belongs to those cases in which there have been previous and not very far distant attacks of appendical inflammation.

Second. The parietal peritoneum may be found normal, but perhaps adherent to the adjacent coils of intestines by a few recent adhesions. On gently pushing through these latter, if such exist, a firmer resistance may be encountered, and on boring through this with the point of the finger the cavity of the abscess is opened. If the parietal peritoneum and the adjacent intestines should be apparently free from adhesions, and yet an abscess be recognized by a tumor, though at some distance from the surface, it can be opened, and entered in the same manner by the finger. When this form of a more deeply located abscess is observed, it is wiser freely to enlarge the incision in the parietal peritoneum and to push away the interposing intestines, until warned by adhesions that the abscess is being approached, when the free peritoneal cavity can in a quite perfect manner be protected from the irritation of the pus that is about to be evacuated, by first packing the cavity with sponges or iodoform gauze; after this the abscess may be opened. I may, however, here remark that the septic influence of such pus on the adjacent intestines, in the cases that have come under my own care or observation, has been entirely absent, and this is contrary to what has been theoretically stated by those who oppose an early operation for the relief of these abscesses.

Third. There may, finally, be found on the immediately presenting loops of intestine next to the parietal peritoneum (or it may be encountered in the region of the cæcum), pus in moderate quantity and not encysted, or purulent lymph smeared over the intestines.

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An exposure of the appendix, which is usually done in these cases, may show indubitably that it is the seat of the trouble, being either inflamed, perforated, or gangrenous; and the further exploration by means of a sponge on a long forceps carried into the pelvis or into the dorsal gutter of this side may reveal that we have to deal with a general suppurative peritonitis.

As a direction common to all of the above conditions save the last, it may be said that if the surgeon encounters a limited abscess and opens it, it is further treated simply by introducing a drainage-tube, or iodoform gauze, or both, and possibly by a partial closure of the abdominal wound and the usual antiseptic dressings.

I have already stated the objections to washing out or freely exploring such cavities. I can also see only danger in all the attempts that have been made by some to search for and to remove either the concretion that has produced the perforation or the perforated appendix itself. If the appendix should, however, be exposed and be readily accessible, it is proper to tie it off by a stout silk ligature. No fear need be entertained of a permanent intestinal fistula in any form of abscess, even where its contents smell strongly of feces, or even where there is a more or less decided flow of the contents of the bowel from the cavity for some time after the operation.

Furthermore, while not in a position to make the statement with positiveness, I have been strongly impressed in my investigations by the fact of the rarity of recurrence of perityphlitic abscesses that have been relieved by operation and where no interference with the appendix had been resorted to. This seems to support the advice just given, not to strive too zealously to get away the appendix. It is reasonable to suppose that the cicatrization of the perforation, occurring, as it usually does, in the upper part of this tube, obliterates its lumen so as to form a permanent safeguard against a recurrence of the disease.

On General Suppurative Peritonitis.—As has been stated, an exploratory operation, conducted in the manner just described, may reveal that the peritonitis has invaded the peritoneal cavity to an extent much wider than the iliac fossa. This spreading inflammation shows itself in two forms, to which I am disposed to attach some clinical difference in importance. One, with the ordinary lymph exudation, with occasional small depots of matter, or with moderate layers of liquid pus bathing sundry sparse coils of intes-

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tines, with its focus of intensity in the right iliac fossa. This form is often associated with both completely and incompletely circumscribed abscesses. And in another form, where there is comparatively a scanty amount of plastic exudation, and where the intestines are bathed over a great extent with a thin layer of pus, which, however, is but seldem encysted, and in which pus is found in considerable quantities in the pelvis or along the dorsal gutters.

This latter form is, to my mind, the most intense, most fulminating, and most septic form of the disease, and is frequently met without any attempt at a circumscribed abscess, or, if so associated, the latter is small and has early burst its barriers. Prior to operation this kind of peritonitis can sometimes be recognized by puncturing through the abdominal wall with a hypodermatic needle in other places than in the right iliac fossa, or by a hypogastric puncture made deep in the pelvis, the bladder being first emptied. Whether these differences in inflammatory action, the result of a perforation of the appendix, are due or not to the amount of fecal or gaseous extravasation that takes place, is somewhat difficult to determine, but the experiments of Pawlowsky[1] seem to support this view. This observer has found, experimentally, that in the peritonitis resulting from perforation of the intestine, a peculiar germ, called by him the bacillus peritonitidis, is usually found, and that cultures of this bacillus brought death, when injected into animals, in from twenty-four to seventy-two hours, with the production of a fibrinous, purulent peritonitis. Where the disease lingered a little longer the peritonitis was purely a suppurative one.

In 6 cases of suppurative peritonitis of a marked character, coming from a perforated appendix vermiformis, and not included in the 26 previously referred to, that have been treated by me by laparotomy, in all was the lumen of the appendix sufficiently large —up to its origin in the cæcum—to have permitted of a free escape of the irritating contents of the intestine. This patency of the appendix I cannot but think must have an influence on the severity of the disease. In health and in disease its lumen greatly varies. Kraft[2] has also suggested that differences of severity might be ascribed to variations in the mobility of the appendix; that, for instance,

[1] Beiträge z. Aetiologie und Entstehungsweise der akuten Peritonitis. Centralblatt f. Chirurg., No. 48, 1887.

[2] Ueber die frühzeitige operative Behandlung der durch Perforation des Wurmfortsatzes hervorgerufenen Perityphlitis stercoralis. Samml. klin. Vorträge, No. 331.

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where it was short, as with a scant mesentery, or was confined by some previous adhesions, a more limited inflammation might be expected. While some observers have advised for a recognized suppurative peritonitis that the treatment required should be carried out through the lateral exploratory incision, I have, in two instances where it was practised in this manner, found myself somewhat hampered by the limitations of this incision, and therefore prefer to make, in addition to the exploratory one, a median incision, believing that this more commanding section expedites the treatment and renders it more certain. The lateral incision can be subsequently utilized for drainage purposes and for the special treatment of the appendix itself.

The median incision is also to be advised from another standpoint which has lately come home to me. In two instances I have observed that though the sponge introduced in the pelvis drew out pus through the lateral exploratory incision, yet the further carrying out of the treatment of cleansing the abdomen, etc., showed that the general cavity had not been invaded throughout its whole extent until the surgical manipulations had been employed, and that, had a median incision been made, one might possibly have been able to recognize and evacuate these abscesses, of unusual size and with slight limiting adhesions, without exposing the patients either to the risk of infecting the only moderately damaged peritoneum above, or, what was more important, might have spared them the exhaustion consequent on the necessity of a prolonged toilet of the abdominal cavity. Hence, it has now become my rule, after the resort to the lateral exploratory incision has demonstrated that no collection of matter is here present, and that the symptoms there or elsewhere found point to a possible invasion of the general peritoneal cavity, to resort to a median incision opening into the cavity rather high up, and carefully to enlarge it downward as may be required. Such abscesses can sometimes be recognized and treated per rectum, which, therefore, should always be examined in a case of perityphlitis or any form of peritonitis.

If, after all, a veritable general suppurative peritonitis be encountered, we have one of the most discouraging lesions in the whole of surgery to treat. Whether we resort to the sponging out of the pelvic cavity or dorsal gutters, a very exhausting procedure, or whether this cleansing is effected by repeatedly filling the peritoneal cavity with boiled water, or with a solution of salicylic acid

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1 : 1000, or other non-poisonous antiseptic solutions, or whether it be accomplished by the less irritating means of irrigation with one or two glass tubes carried down to the bottom of the abdominal cavity in various directions, according to Tait's suggestion, and however thoroughly, however quick this end may be accomplished, and however satisfactorily we may place our drainage tubes, say one in the pelvis, one out through the lateral incision down to the stump left by the removed appendix, the difficulties of the case are but half encountered.

No delay need be made in this part of the operation, or, indeed, under any circumstances, by endeavoring, after cutting off the appendix, to cover the remaining end by peritoneum, as Treves has suggested. Surgical experience is sufficiently great, here as well as in the removal of the gall-bladder and in ovariotomy, to show that this is unnecessary. Granted that the patient's strength, already wasted by the disease, enables him to tide over the shock of an operation of this character, there remain after the closure of the wound dangers which thus far our surgical art has not yet learned to overcome.

Out of twenty-five cases of this description of general peritonitis arising from perforation of the appendix vermiformis, but one has, so far as I have been able to learn, been saved. Two doubtful cases[1] have been recently classed in this catalogue, but a closer reading of their histories seems to point more toward the spreading exudative form of peritonitis with a circumscribed abscess than to the true suppurative type; but even these should be considered as triumphs of surgery.

In my own six cases of laparotomy for this disease in its well-marked form, death ensued in every instance, either from the shock of the operation—that is to say, within twelve hours thereafter—or from the persistence of the symptom which exists nearly always before the operation—I mean fecal or fecaloid vomiting, the matters vomited being always of a yellowish or creamy-brown color, but not always having a fecal odor attached to them; a condition which, beginning as the ordinary green bilious vomiting, thence changing to the above character has been so frequently proved to me by autopsy in connection with intestinal stenosis where no peritonitis existed as to convince me that its significance is always that of ob-

[1] Those reported by Drs. Sands and Jacobus.

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struction, though it is true this obstruction may be caused by peritonitis. This obstructive symptom is due, as the interesting investigation of Malcolm[1] has shown, to paralysis of the muscular coat of the bowel occurring from the overstimulation of the nerve-plexus of Auerbach which supplies it. Operative procedures of themselves sometimes occasion this paralysis, but septic influences are the most potent causes.

Sometimes obstruction is produced by the pressure of the distended coils on an adjacent part of the bowel.[2] This has been found not rarely in post-mortem examinations. Irregular contractions of the bowel due to septic irritation of the muscular coat are also found. It is this absolute paralysis of the intestine which constitutes, in addition to the general poisoning of the system, the great danger in these cases. And while the success of the early use of purgatives in the lesser forms of obstruction after ordinary laparotomies has only confirmed Mr. Tait's eulogy of this method of treatment, yet in these marked septic forms of peritonitis his treatment utterly fails. It is the exception to succeed in bringing about purgation, use what you will, whether salines, mercurials, or the washing out of the stomach.

In the three of my cases wherein the duration of life after the operation was prolonged sufficiently to enable me to undertake the trial of every method to overcome the obstructive symptoms, nothing brought about a discharge from the bowel save in one instance, and in this to but a slight extent. Moreover, in one case, as a last resort, it seemed proper to me to open one angle of my abdominal wound and to draw out the first presenting distended loop of intestine, at that time shut off by adhesions from the general cavity, and open it. But a scanty amount of fluid feces came out of the artificial anus thus formed, and without any marked relief to the patient. Also in one of Duplay's cases a tube was introduced through the perforated appendix into the colon without any benefit resulting therefrom.

In the autopsy of all of these cases (and this remark is only of value in the three who lived beyond twenty-four hours) there was but very slight evidence of fresh peritonitis, yet the temperature

[1] The Condition and Management of the Intestine after Abdominal Section, considered in the light of physiological facts, by John D. Malcolm. Med.-Chir. Trans., vol. 81, 1888.

[2] Verchére: Septicémie Intestino-Peritonéale. Revue de Chirurgie, July, 1888.

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had kept up so high throughout as to corroborate the belief that no matter how thoroughly one might wash or cleanse the peritoneum during the operation, much septic material must be left in the various patches of exudation or in the inaccessible nooks of this cavity, to perpetuate the infection raging in the general system.

I had been much struck with the remarkable results witnessed in the wards of Mr. Treves in the treatment of suppurating disease of the knee-joint, by continued aqueous irrigation for a period of nearly a month, with the effect of securing a perfectly movable articulation, and had determined, in the next case of suppurative peritonitis presenting itself to me, so to arrange an entering tube, lodged in the pelvis, and a smaller emergent one in the upper part of the abdominal cavity, as to conduct a continuous stream of boiled or salicylic water through these for a number of days, and thus to secure, at least for a moderate length of time, a hyperdistention of the cavity, and a thorough dilution of its poisonous contents.

This idea, I have already learned, has been put into effect by Penrose, of Philadelphia,[1] who used on one occasion two glass tubes placed in the pelvis, and one large tube running from the epigastrium to the lower angle of the abdominal incision. The irrigation was not, however, continuous, but the abdomen was flushed with warm water every two hours for twenty-four hours after the operation, with a successful issue to this case of suppurative peritonitis with gangrenous patches on the sigmoid flexure.

Greig Smith[2] and Wylie also announce that they have used this repeated peritoneal flushing with advantage. Clinically, however, it must be admitted that such hyperdistention of the peritoneal cavity and ablution of the intestines can be carried on but a short time, as experience with the ordinary drainage-tube shows how rapidly the general cavity is shut off by adhesions.

In concluding these remarks it must be again placed prominently forward, that though laparotomy for general peritonitis following perforation of the appendix has had most discouraging results, yet that in nearly every case in which it has been so performed the disease had existed, on the average, nearly three days, the shortest time being thirty hours. Pawlowsky's experiments, and my own operations and those of others, tell us that the delay is an all-important

[1] Intestinal Obstruction in its Surgical Aspects. Journ. Amer. Med. Association, July 14, 1888.

[2] Abdominal Surgery, 2d edition.

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fatal factor in these cases. Where the agonizing pain that ushers in often mild as well as severe cases does not yield to opening and the vomiting does not cease, and particularly the temperature does not fall within twenty-four or, at the most, forty-eight hours, then promptness of surgical action is required. Much less time should be allowed if the pain spreads, and other symptoms aggravate in severity. The query is, whether the prospect of an early laparotomy is a better one than the chance of a limited abscess forming. The latter is not a large one. My own collection of autopsies shows that a patient has about twenty-five chances in a hundred in his favor.

I venture, therefore, in terminating this paper, to present the following conclusions, based on observations of 100 post-mortem examinations and from 32 personal operations for so-called perityphlitic abscesses:

I. That all such abscesses originate in the peritoneal cavity, and there develop to an appreciable size before invading extra-peritoneal tissues or viscera.

II. That as stercoral accumulations or cæcal perforations are so rarely met with as causes of perityphlitic tumor or abscess, they should not be considered from a clinical view in any given case.

III. That in an attack of perityphlitis originating, as it generally does, as a perforation, or as a gangrenous condition of the appendix vermiformis, all use of purgatives or enemata is in the beginning of a case to be avoided, and the immobilization of the patient is to be insisted on, and aided, if necessary, by anodynes.

IV. That if a tumor be found, it be opened by a lateral incision as soon as symptoms, constitutional or local, indicate the formation of pus.

V. That if symptoms indicating an increase of the local peritonitis, such as the persistence of vomiting, spreading pain, abdominal resistance, and temperature elevation, continue, with or without the formation of tumor, for a period of forty-eight hours, the danger of the disease is greater than the proposed lateral or median laparotomy, which should then be immediately resorted to. In many instances even a less time should be afforded the consideration of the disease before operating.

VI. If a general peritonitis be suspected, corroboration can often be obtained by abdominal aspiration with a fine needle employed in places other than in the right iliac fossa, and particularly by a deep

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hypogastric puncture into the pelvis, the bladder being first emptied. However, if left in doubt, it is better to operate.

VII. [*Sub judice.*] That if general suppurative peritonitis be found at a laparotomy, lateral or median, avoid too much handling of the intestines, and trust to either temporary irrigation with large glass tubes (Tait's), or, more rationally, to permanent or repeated irrigation and fluid distention of the abdominal cavity, as advocated by Greig Smith and by Penrose.

VIII. [*Sub judice.*] To meet the obstruction symptoms due to septic paralysis of the bowels, which often persists after a laparotomy for suppurative peritonitis, saline purgatives and repeated washing out of the stomach should be resorted to, even though vomiting be present to a marked degree. Enterotomy may also, in exceptional cases, be entertained.

DISCUSSION.

Dr. A. VANDER VEER, of Albany: This subject is one that interests us all. Dr. Weir in his conclusions has presented it to us in a very forcible and clear manner. I believe that most of the so-called perityphlitic abscesses have their origin from some pressure within the appendix; whether it results from a simple appendicitis, or from some foreign substance or fecal concretion we are not always able to tell, but there are undoubtedly a large number of cases where the inflammation is simply a catarrhal condition. These latter are the mild cases, and are the ones that we know full well recover, and that an abscess forming from simple inflammation is rather the exception. When the abscess threatens, or really forms, then the mild case becomes really dangerous. It is these cases that seem to go well for a time and then, as the doctor expresses it, we have a breaking of the small abscess into the peritoneal cavity; we have an explosion, as it were, in the form of suppurative peritonitis and a condition of collapse, when no operation is permissive. Such cases present to us the very grave problem, and which is so difficult to solve—*i. e.*, when should we operate, and how early. In cases of acute appendicitis, which comes to the patient suddenly, and when from the pressure of some foreign substance we have the evidence of ulceration, or sudden rupture, I am strongly of the opinion that an early operation is the only safety for our patient, and we must perform it earlier in the future than we have in the past. In the cases that have gone on for some time, and where it is evident that from pressure perforation is threatened, and we have, or are likely to have, within a few hours suppurative peritonitis, I think the doctor has

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brought out a point that will prove very profitable to us: when we make our incision and find there is present suppurative peritonitis, it is well to search carefully for the point of trouble, but if the appendix has already become adherent and there is no oozing out from it of intestinal contents, it is certainly wise to let it alone, or possibly removing that portion which is in a sloughing condition. I agree with Dr. Weir fully that we should be exceedingly careful how we handle the intestines a such a time—simply to sponge out or irrigate thoroughly is a very safe method. If there be any suppuration present, or if we find it is very general, then it may be wise to flood the intestines in a hot-water bath at 105° or 110° F., and in this way we may do good in preventing adhesion. The good that results from the administration of salines in peritonitis is undoubtedly perceptible in such cases where there is no suppuration present. In all cases of peritonitis, after laparotomy, when done in an antiseptic manner it is the exception to meet with suppurative peritonitis.

We get distention from cases that have vomiting of a greenish, spinach-like character, and by the giving of salines we find that a great deal of good results: that our patients are relieved more quickly than by any other method.

As to the manner of making an early diagnosis in cases of threatened abscess in the neighborhood of the appendix, I must say that I am very much afraid of using the aspirator; I believe that in many cases it is safer for our patient to make an incision down to the point of supposed lesion than to attempt its use. As to the manner of making the incision, when there is great distention the median section is undoubtedly the best. It offers us a better opportunity of taking care of the intestines that must protrude, and then we can reach the point of trouble far better. The lateral incision in such cases where there is no great amount of distention, is certainly an excellent method. When the abscess is extra-peritoneal the operation that is done ordinarily presents results that are very gratifying. It will be remembered that a few years ago I reported several operations, in a few cases finding foreign substances that had caused the abscess. With an additional record of cases I have every reason to be pleased with the results; but, as Dr. Weir has stated, some of my patients were very ill and had a very narrow escape from death.

There is a great deal in reference to this subject that we need to impress upon the profession at large; these cases are not to be left entirely to the physician. I believe it is the duty of the general practitioner when he gets a case of supposed trouble in the neighborhood of the appendix to call in his associate surgeon, and let them together share the responsibility of the case.

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XXXII. Kocher's Method of Reducing Subcoracoid Dislocations of the Humerus.

A PLEA FOR ITS EMPLOYMENT IN EVERY RECENT CASE.

By CHARLES A. POWERS, M.D.,
SURGEON TO THE OUT-PATIENTS' DEPARTMENT, NEW YORK HOSPITAL.

Consideration of the various forms of the luxations which occur at the shoulder-joint, their causation, mechanism, pathology, and immediate and subsequent treatment, is without the scope of this brief paper. In the few moments which are at my disposal I shall call your attention to but one point, the reduction of the subcoracoid form by the method known as "Kocher's." And I venture to assert that there is no surgical procedure of equal simplicity and of like importance as little known to the profession of our country as is this.

In the *Berliner klinische Wochenschrift* for February, 1870, Professor Theodor Kocher, of Berne, first published the results of his cadaveric researches regarding the mechanism of this dislocation, and gave to the profession the most logical, scientific, and successful plan for its reduction which has yet been presented. His theory is that the end to be attained in attempts at reduction is to open the rent in the capsule and to relax its intact portions without employing force. When the head of the bone passes from the glenoid cavity to beneath the coracoid process, it rends the capsule at its inner and lower part. The rent extends to the insertion of the tendon of the subscapularis, lacerating some of the fibres of the structure. Tension in the capsule is greatest at its upper part, between the tendon of the long head of the biceps and the upper border of the subscapularis. The posterior portion of the capsule and the tendons which reinforce it are preserved and stretched across the glenoid cavity. At the point of greatest tension the capsule is reinforced by the coraco-humeral ligament. When, in a given case of subcoracoid luxation, the arm is adducted and strongly rotated out, the rent in the capsular ligament will be freely opened; but as the upper and lower parts of the capsule are yet tense the head of the bone remains firmly fixed against the anterior edge of the glenoid cavity.

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If, however, the arm is brought forward and upward across the chest, the upper part of the capsule relaxes; but the lower part, being yet tense, serves as a fixed point about which the head of the bone revolves and thus slips into its cavity.

Professor Kocher turned this anatomical knowledge to account in formulating the following procedure[1] for the reduction of a humerus, the head of which rests beneath the coracoid process.

Suppose the right shoulder to be the seat of the injury. The patient is seated and the surgeon kneels beside him. With his left hand he grasps the arm of the patient just above the elbow. The patient's forearm being flexed to a right angle, the surgeon firmly seizes the wrist with his right hand. Then adducting the elbow to the body he utilizes the lever furnished by the forearm and rotates the arm out until firm resistance is met (practically until the forearm makes an angle of ninety degrees with the antero-posterior plane of the body). Now, with the arm still strongly rotated out, he brings the elbow forward and upward in the sagittal plane across the chest, and finally rotates the arm in, and places the patient's hand on his opposite shoulder.

This procedure I would amend by placing the patient squarely on his back, with both shoulders resting on a firm table, and as there is a great tendency for him to turn his body to the affected side during the external rotation of the arm, I think it well that the opposite shoulder should be held down. This may be done by a bystander. It is well, also, that downward traction[2] be added to adduction of the elbow in the first movement.

The following case will serve as an example:

A muscular porter, aged twenty-six, presented himself at the Chambers Street Hospital with the history of having fallen forcibly on the external aspect of the right shoulder twenty minutes previously, the arm being at the time of injury abducted to about seventy-five degrees.

Examination revealed a typical subcoracoid dislocation of the right arm. There was the usual prominence of the acromion with a hollow beneath it, the head of the humerus was both seen and felt beneath the coracoid process of the scapula. The elbow was abducted thirty degrees from the body. The affected arm was about one-eighth of an inch shorter than its fellow.

[1] This procedure Kocher modestly calls a modification of Schinzinger's, but it differs in a most important particular. The first two movements are alike in both, but at the end of external rotation (second movement) Schinzinger has an assistant draw the head of the bone into its place by means of a fillet, or he grasps and forcibly presses it outward.

[2] Jersey: New York Medical Journal, September, 1883.

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No fracture could be detected. The patient having well relaxed his muscles, Kocher's procedure was employed as above described. As the arm underwent external rotation the contour of the shoulder become fuller, and at the beginning of the third movement (sweeping the elbow forward across the chest with the arm still in external rotation) a distinct crackling sound was heard and the head easily slipped into the glenoid fossa. The patient said that he experienced very little pain.

The crackling sound, of which mention is made, is very often heard as the head goes back. It has been thought by some writers to be due to a progressive laceration of the capsule, but this I think incorrect, for it does not occur while the capsule is at its greatest tension. I think it simply bony crepitation produced by the slipping of the head of the humerus across the anterior margin of the glenoid fossa.

In a later article[1] Professor Kocher lays additional stress on the importance of the coraco-humeral ligament, and, likening it to the ilio-femoral ligament of the hip-joint, says that the subcoracoid dislocation at the shoulder corresponds to the obturator dislocation at the hip. In a minute description of the coraco-humeral ligament he says that it assumes the form of an inverted Y, the outer limb of which is a strong, tense band of fibres passing between the upper part of the glenoid fossa and the greater tuberosity. (It has heretofore been confounded with the tendon of the supraspinatus, which stretches across this part of the capsule.) The tension of this outer limb "wedges in" the head of the humerus beneath the coracoid process. The other part of the Y runs to the lesser tuberosity and the adjacent capsule. Fibres pass between them which correspond to the zona orbicularis at the hip. The internal limb is the stronger, and limits external rotation. Professor Kocher says that when the coraco-humeral ligament is ruptured, or the anterior portion of the capsule severely torn, the procedure fails because the humerus loses the fixed point about which it should revolve. Farabœuf,[2] however, has come to a conclusion diametrically the opposite of this. He proved upon the cadaver, and showed to the Surgical Society of Paris, that though all of the anterior ligaments be cut the procedure succeeds; but when the posterior portion of the capsule is divided the head simply revolves in external rotation but fails to enter its normal cavity. He contends that the success of Kocher's procedure

[1] Volkmann's Sammlung klinischer Vorträge Chirurgie, 1–28.
[2] Bulletins et Mémoires de la Société de Chirurgie de Paris, 1885.

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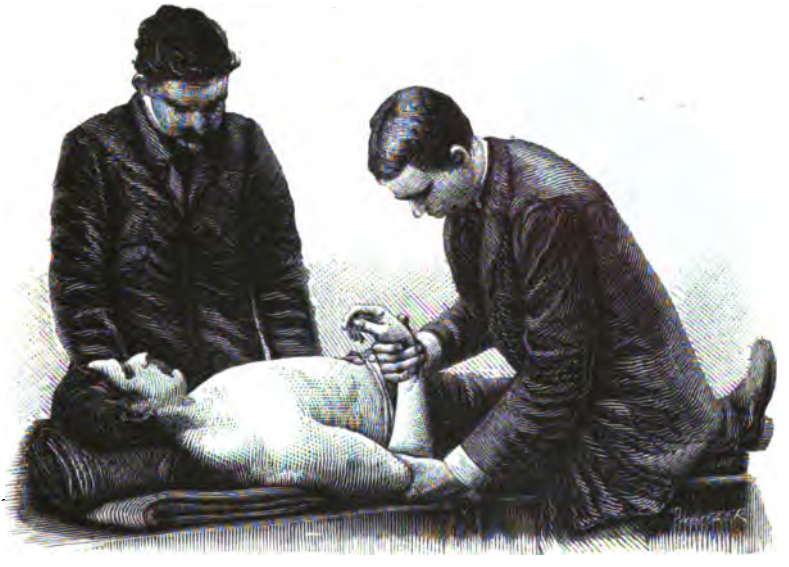
FIG. 1.



First movement. The elbow is adducted to the body and drawn downward. (The arm and wrist should be firmly grasped, as shown in the figure.)

FIG. 2.

Second movement. The arm is rotated out until firm resistance is met. (Practically until the long axis of the forearm points directly outward.)

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FIG. 3.

Third movement. With the external rotation of the arm still maintained, the elbow is carried forward and upward on the chest.

FIG. 4.

Fourth movement. The hand is placed on the sound shoulder.

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is due to the integrity of the posterior portion of the capsule; that when the first movement, or adduction, is made, this portion is made tense; that in the second movement the head is turned outward around the lower fixed point of the ligament, and in the third movement it simply undergoes an external excursion through the rent at the inner part of the capsule and into the glenoid cavity.

Through the courtesy and with the assistance of Dr. George B. Phelps, Jr., Demonstrator of Anatomy at the Woman's Medical College, experiments were made upon the cadaver, with a view to proving the correctness of one or the other of these assertions. Upon one shoulder we divided subcutaneously the capsule at its inner and lower part, and threw the head of the humerus beneath the coracoid process. Kocher's procedure easily replaced it. We then cut the coraco-humeral ligament and the anterior part of the capsule, but employment of the procedure was equally successful in reducing the dislocation. Upon another shoulder the posterior part of the capsule was divided, after the head of the bone had been dislocated forward, yet it was replaced by Kocher's manœuvre as easily as were the others. It was only after the capsule had been almost completely divided that external rotation failed to meet with resistance. Through lack of time but few experiments were made, and their results are unsatisfactory and inconclusive. I hope in the near future to make an additional communication upon this interesting point.

In the article above referred to in Volkmann's *Sammlung*, Professor Kocher states that since his original paper he has adopted the procedure in thirteen cases, in eleven of which reduction was easily effected, and without the aid of an anæsthetic. In a still later article[1] he places added emphasis on the value of the manipulation, and avers that it is applicable to old cases as well as to those of recent date. In the original paper he contended that it was inapplicable to the intracoracoid cases (the subclavicular of English writers); but he now states that it does succeed in these if the elbow be adducted in the posterior axillary line during the first movement.

Ceppi[2] concludes that all known methods for the reduction of this luxation are inferior to that of Professor Kocher, and in a later

[1] Transactions of the International Medical Congress, vol. ii., 1881.

[2] De la Réduction des Luxations sous-coracoidiennes, traumatiques, simples et récentes. Paris, 1878.

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article[1] says that further experience only strengthens this opinion. Kaufmann[2] says that when correctly applied the method is always successful, and that without the aid of an anæsthetic. He cites eleven cases reduced by him. Carafi[3] says, "thanks to the method of Kocher, the reduction of recent subcoracoid dislocations is now one of the simplest procedures in practical surgery." He had used it with success in twenty cases, and recommends that in the subclavicular cases the arm be held for two or three moments in the position of external rotation. Davezac[4] employed it with success in several instances, and recommends that it be applied to every recent case. Poinsot,[5] Perrier,[6] and Ferron,[7] strongly endorse the method, but add nothing of moment. Mr. C. Heath[8] relates five cases occurring in his service at University College Hospital, in three of which the bone was replaced at the first attempt and without ether, while in the other two an anæsthetic was given. Mr. Pick[9] considers the plan the simplest for the reduction of shoulder dislocations, but incorrectly states that it is applicable to the subglenoid variety as well as to the subcoracoid.

All writers agree that the procedure fails when the capsule is severely torn, and in support of this permit me to cite to you the following case:

A muscular man, twenty-eight years of age, sought treatment at the Chambers Street Hospital, January 28, 1889, with a history of having recently had the left shoulder caught between an elevator and a beam, and subjected to severe pressure, the arm at the time being abducted. The shoulder was the seat of a typical subcoracoid dislocation. Kocher's method was tried, but was unsuccessful. During the second movement (external rotation) no resistance was met. The method also failed under ether, and the arm was replaced by direct traction at a right angle.

The lack of resistance during external rotation seems very good evidence of severe injury to the capsule.

Its Employment at the Chambers Street Hospital, New York.—Early in 1883 a description of the method came under the notice of Dr. William T. Bull,[10] the Attending Surgeon to the Hos-

[1] Revue de Chirurgie, 1882, No. 10.
[2] Centralblatt für Chirurgie, 1881, No. 30.
[3] Revue de Chirurgie, 1881.
[4] Journal de Médecine de Bordeaux, No. 32, p. 351.
[5] Traité des Fractures et Luxations d'Hamilton.
[6] Thèse de Paris, 1884.
[7] Recueil de Médecine et de Chirurgie militaires, 1885.
[8] Lancet, April 14, 1883, p. 634.
[9] Fractures and Dislocations, p. 375.
[10] To Dr. Bull should be accredited its introduction in this country.

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pital, and under his direction its employment was commenced and continued. The first case was that of a man, seventy years of age, who presented himself at the hospital March 3, 1883. His subcoracoid humerus was so quickly and easily replaced in its normal cavity that surprise and delight found place in the minds of all who observed the procedure. Since then the method has been used to the exclusion of all others. The results in the first six months were published by Dr. Charles A. Jersey, in the *New York Medical Journal* of September 23, 1883, in an article entitled, "Twenty-one Cases of Subcoracoid Dislocation of the Humerus reduced by Kocher's Method." In seventeen of the twenty-one cases the reduction was effected at the first attempt, in the other four the bone went back at the second, third, fourth, or fifth attempt, respectively. In none was an anæsthetic used.

During the five years ending with October 1, 1888 (the five years following the publication of Jersey's paper), 173 recorded cases of recently dislocated humerus find place in the history books of the Chambers Street Hospital. Of these, 44 were subglenoid and 129 subcoracoid.

The results of treatment in the subcoracoid cases are as follows:

Without ether, Kocher's manipulation, successful at first attempt .	98
Without ether, Kocher's manipulation, successful at second attempt	6
Without ether, Kocher's manipulation, successful at third attempt	8
Without ether, Kocher's manipulation, successful at fourth attempt	1
Failed without ether, with ether successful at first attempt . .	6
" " " traction at a right angle, successful . .	5
" " " foot in axilla, successful	1
" " " the head undergoing extreme external rotation[1] slips into axilla and is then reduced as axillary	1
Kocher not tried, success by traction at a right angle . . .	3
	129

We thus see that, of the 126 cases in which the procedure was resorted to, it was successful in 98 cases, or 77+ per cent., at the first attempt, and that without the aid of an anæsthetic. Let us, however, make due allowance for the fact that these dislocations were reduced by some twenty-five different gentlemen, each of whom numbered in this list his "first case," on which, perhaps, he failed at first attempt. Let us assume, moreover, that the list is not en-

[1] Doubtless a case in which the capsule was severely torn.

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tirely free from diagnostic errors, and that more than one case which is classed as subcoracoid, was, in reality, an axillary luxation.

From the personal reduction of a not inconsiderable number of these cases, and the observation of many more, I am fully prepared to share the opinion of the authors to whom I have referred, that "in a recent simple case, the manipulation should prove successful at the first attempt, without anæsthesia." In none of these cases was an injury inflicted on the axillary vessels or nerves. Recital of them would be devoid of interest. Most of them occurred in muscular laborers;[1] many of the patients presented themselves in a state of intoxication, and either strenuously resisted manipulation, or absolutely refused it without the influence of an anæsthetic. These considerations aid in accounting for the "first attempt" failures, for those cases in which ether was given.

Causes of Failure.—1. Muscular rigidity. 2. Extensively torn capsule. 3. Fracture complicating the dislocation. 4. Error in diagnosis. 5. Failure to adduct the elbow properly, or sufficiently to rotate the arm out. 6. Inward rotation of the arm before completion of the third movement. 7. Dislocation of such long standing that adhesions had formed about the head and neck of the bone.

Conclusions.—1st. Of the various luxations which the humerus undergoes, the subcoracoid is much the most common.

2d. The method to be employed in its reduction is, *par excellence*, that of Kocher, and it should be used in every recent case.

3d. The procedure is logical and safe. It may easily and rapidly be carried out. Its careful, accurate, and thorough employment will almost invariably assure success at the first attempt.

4th. It will not succeed in those cases, happily uncommon, in which the capsular ligament is severely torn.

5th. The patient should be in the dorsal position.

6th. An anæsthetic is unnecessary.

7th. The aid of a skilled assistant may be dispensed with. It is advisable that the opposite shoulder be steadied, but this can be done by a layman.

8th. It is attended with the least possible pain to the patient.

[1] It seems unnecessary to call attention to the patent fact, that before attempting the reduction of any dislocation the patient's muscles should be thoroughly relaxed. In ignorant or frightened subjects this is often difficult of attainment.

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9th. It is practically without danger to the important vessels and nerves.

10th. The question as to whether its success depends on the integrity of the anterior or of the posterior part of the capsule must yet be considered *sub judice.*

11th. It rarely succeeds in the subglenoid form.

12. It is applicable to the intracoracoid cases, but in those the elbow should be placed behind the posterior axillary line (Kocher) and external rotation should be maintained for two or three minutes (Carafi).

13th. In all cases in which much resistance is met with during the early part of the second movement the position of external rotation should be steadily maintained for a short period before bringing the arm forward and across the chest.

DISCUSSION.

Dr. L. S. PILCHER, of Brooklyn: This is undoubtedly a valuable and feasible method of treating these cases, but I regretted not to hear in the remarks of the speaker any reference to the labors of one of our own countrymen, my former instructor the late Dr. Gunn. More than thirty years ago he published in a local journal in the State of Michigan, the *Peninsular Medical Journal* I think it was called, a study of dislocations, in which he elaborated and described the anatomical peculiarities and pathology of certain dislocations, including those at the shoulder-joint, describing the identical conditions which have been described to us to-day. He also founded on these anatomico-pathological conditions a theory and a method of reducing these dislocations which is very similar to that which has just been described and illustrated to us. I remember distinctly, more than twenty-five years ago, his description to us and his illustration of the method, and I am inclined to think that if the literature is searched the author will find in the work of our countryman, Dr. Gunn, something which precedes Dr. Kocher's work, and something which he will be delighted to add to the paper read here to-day.

Dr. ROBERT F. WEIR, of New York: I rise to congratulate the Society upon having a paper of this sort presented to them, because of the frequency with which the general practitioner is most apt to meet such dislocations. I wish to add my favorable testimony to the plan so ably demonstrated by Dr. Powers. Indeed, Kocher's method is the one which is generally used in the New York Hospital.

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Dr. ROBERT ABBE, of New York: I would like to add a few words in praise of this method. I have had half a dozen cases under observation in which I resorted to Kocher's method without an anæsthetic, and without putting the patient on his back. I have observed one point which Dr. Powers did not mention: that in two cases the reduction was completed before the hand was extended, or the elbow brought far forward on the chest; the first two steps in the procedure were sufficient to allow the joint to resume its position before the third was completed. I think it is quite remarkable that we should be allowed to listen to such a series of statistics with this remarkable showing, but I believe there is no institution in the country, except the Chambers Street Hospital, which harbors so many recent accidents and where these could have been collected.

XXXIII. THE MANAGEMENT OF HIP-JOINT DISEASE FROM AN ANATOMICO-PATHOLOGICAL BASIS.

BY A. M. PHELPS, M.D.,
NEW YORK.

THE diversity of opinions in the profession as regards the management of morbus coxarius has led me to present this paper upon that subject to-day. The plan of treatment advocated by many of the American orthopædists is extension by means of some form of portable apparatus which allows of free motion of the diseased joint during locomotion. But all, with an occasional exception, appear to unite upon the idea that extension is the first principle in the treatment. By extension of a joint we do not mean that the joint surfaces are separated, but that intra-articular pressure is relieved, and the joint protected from the trauma due to reflex spasm of the muscles.

Opposing this idea are Thomas and his followers, who believe that the joint should be absolutely immobilized, that the patient should never be allowed to walk upon the apparatus, but use crutches, and that all forms of extension apparatus are entirely useless. And then we have the third school, who believe that the disease is *constitutional*, and who advocate the use of local applications, constitutional treatment, fresh air, etc.—paying but little attention to the mechanical treatment of the joint.

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It seems to me that those who have carefully observed tubercular inflammation of this joint or its appendages will have been convinced that the spasmodic action of the muscles is a very important element in producing the destructive changes which so frequently and so generally follow in joints not treated.

Thomas denies that there is spasm of the muscles about the joint. The American surgeons seem to be pretty generally convinced that spasm of the muscles always occurs. I believe that all cases of hip-joint disease are attended with spasm of the muscle; that the spasmodic action of the muscles produces great intra-articular pressure; that the trauma resulting is the chief factor in producing destruction of the joint. Volkmann, Albert, and König demonstrated that inflammation of the hip-joint begins as a simple inflammation, either in the soft parts or the bony structures, subsequently becomes tubercular by inoculation, then purulent; in other words, nearly all joint affections of a chronic nature are tubercular. The idea that *tuberculosis of joints is a local disease due to accidental inoculation and not to a constitutional or strumous condition, which means nothing, I most heartily indorse.* The irritation of the peripheral extremities of the nerves in or about the joint produces spasm of the muscle, the spasm of the muscle in its turn destroying the joint by trauma, aided by the rapid reproduction of the bacilli of tuberculosis; moreover, if these cases of chronic tubercular joint diseases are perfectly immobilized and the intra-articular pressure removed, nature will take care of the tuberculous material, and the same results should be attained in hip-joint disease as in that of the knee. Bone abscesses will become arrested, or, if they do rupture into the joint, the quantity of pus will usually be limited.

Those gentlemen who advocate the constant moving of the joint during inflammation argue that ankylosis will certainly follow unless motion is kept up. Thomas, of Liverpool, says that ankylosis is more certain to follow if motion is allowed, and that an inflamed joint is not so liable to ankylosis if absolutely immobilized; that the ankylosis which follows is produced by the severity of the inflammation, and not by immobilization.

Many also teach that healthy joints will become ankylosed if immobilized for any considerable period. In answer to them I will say that I have immobilized inflamed hip-joints from ten months to a year and a half without producing ankylosis; that I have also

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immobilized healthy joints in animals from six weeks to four months without producing ankylosis, as these specimens will illustrate. (Specimens were shown of joints of dogs immobilized in the Loomis Laboratory for four months by means of plaster-of-Paris, which to all appearance were normal.)

Two cases of morbus coxarius were presented, one of which had been secured in a Sayre wire cuirass for eight months without movement. The hip-joint was found freely movable. The other case was one of extensive abscess of the hip-joint, which had been freely opened and washed out. The boy had been fixed in the portable bed for five months, the joint being kept perfectly at rest. The joint was freely movable, and but little pus discharged from the sinus, perhaps two drachms in one week.

Where abnormal intra-articular pressure is present there is danger of destruction of the head of the bone even in a healthy joint, as is illustrated by this specimen which I hereby present. The hind leg of the dog was fixed over his back with plaster-of-Paris in a cramped position. At the end of six weeks he was killed and the hip-joint examined. The head of the bone and acetabulum were red and congested, and the cartilage was commencing to disintegrate. The knee-joint, in which no intra-articular pressure was made, was found normal.

To the gentlemen who argue that motion should be permitted in an inflamed joint, I will say they seem to forget that one of the laws of surgery is that where a part is inflamed it should be put at rest whether it is muscle or joint, or any other part of the body that can be immobilized. By constantly moving the joint the delicate new tissue which nature is trying to produce is broken up, which may lead to destruction of the joint, either by necrosis, ankylosis, or cicatricial contraction of the capsule.

The spasm of the muscle is due to reflex irritation of the peripheral extremities of the nerves supplying the bony or soft parts of the joint. The atrophy of muscle which follows I believe to be produced mechanically, the result of reflex contraction. The muscles of the leg in the dogs which were immobilized for three and four months were found to be extremely atrophied, although, as you have seen, no disease was present in the joints or bone. However, this is still an open question, Barwell believing it to be a true atrophy of degeneration due to nerve-disturbance. The atrophy is in proportion to the severity of the reflexes. The contraction of

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muscle is in proportion to the reflex irritation; the reflex spasm in proportion to primary irritation of peripheral nerves in or about the joint.

Reflex spasm is greater in bone disease owing to the greater pressure exerted upon the nerve filaments, and much feebler when only soft parts are inflamed. Atrophy of the muscle is frequently seen where no bone disease is present. It is more likely to follow bone disease on account of the severe reflex spasm. All the muscles about the hip-joint are more or less affected by spasm in inflammation. Those most notably affected are the abductors, adductors, and flexors. The spasmodic and rigid contraction of these muscles, together with the rotators, produces limited motion in hip-joint disease. The amount of contraction necessary to produce this limited motion causes great intra-articular pressure and lends to congestion and necrosis either of the head of the femur or of the acetabulum, the bacilli playing a secondary part and depending to a certain extent upon the constant irritation and local rise of temperature for their growth.

I fully agree with Sayre, Taylor, Barwell, Marsh, and others, that spasm of the muscle should be overcome by extension. I also fully agree with Thomas, of Liverpool, that every joint should be fixed and absolutely immobilized until all inflammatory action has subsided and a cure effected. But I do not believe that immobilization of the joint can be accomplished without extension; neither do I agree with the first-named gentleman that extension immobilizes a joint sufficient to get the best results possible, but that a combination of the principles of fixation and extension should be the law. Hence the long traction splint which admits of motion does not immobilize, and the patient produces injury of the joint every time he steps upon it, as is evidenced, in the vast majority of cases, by the almost constant increase of the deformity after the splint is adjusted. Neither does a Thomas splint produce extension; hence there must be abnormal intra-articular pressure when spasm or contraction of muscles is present, which must produce congestion of the head of the bone. And then, if extension is to be applied it should be in the direction opposite to the line of traction made by the muscles. In other words, to apply extension to a hip-joint we should not only make traction in the line of deformity but also in a line at right angles to that deformity. In other words, to relieve perfectly intra-articular pressure extension must be made in a line corre-

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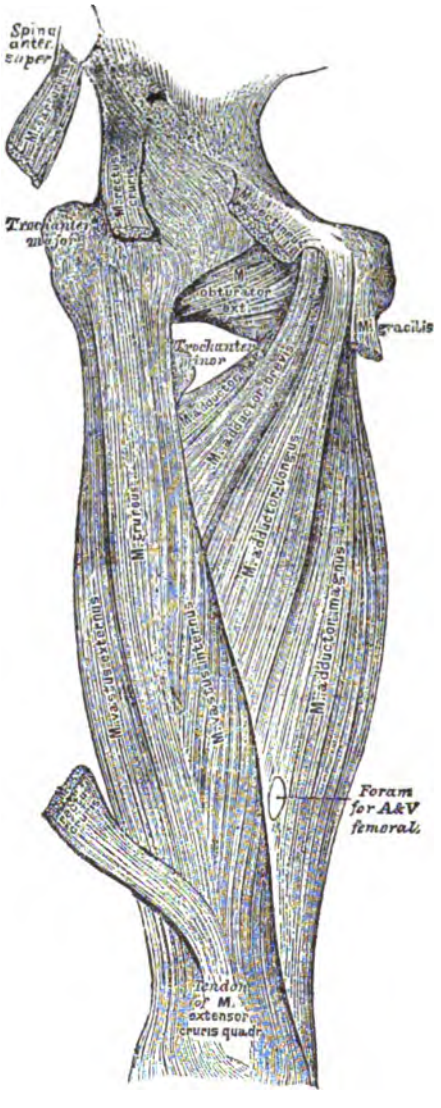
sponding to the axis of the neck, and not with the axis of the shaft, for the following reasons: *The adductors and abductors pass from*

Fig. 1.



the femur diagonally across the body to the pelvis, as Figs. 1 *and* 2 *will demonstrate. These, with other muscles, are the ones affected by spasm. When they contract the head of the bone is drawn firmly into*

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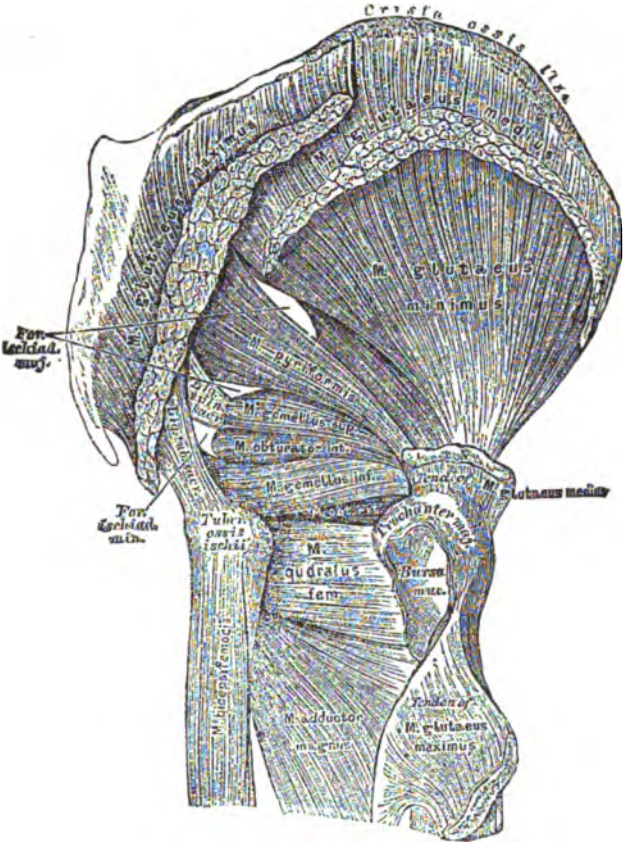
the acetabulum, the force operating on a line corresponding to the axis of the neck. The flexors act on a line corresponding to the axis of the shaft.

FIG. 2.



No apparatus has heretofore been devised which will so perfectly fix a hip-joint as double extension in bed—the body and well leg fixed to a long splint—first recommended, I believe, by Dr. Sayre (see Fig. 3). The slipping of the bandage proved to be a nuisance. This led me to substitute the plaster-of-Paris, which meets every requirement. The splint should extend to the axilla. The diseased limb should be held in the deformed position during its application, that the body and healthy limb may be in a normal position.

The treating of a case in bed for a long time I do not believe to

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Fig. 3.

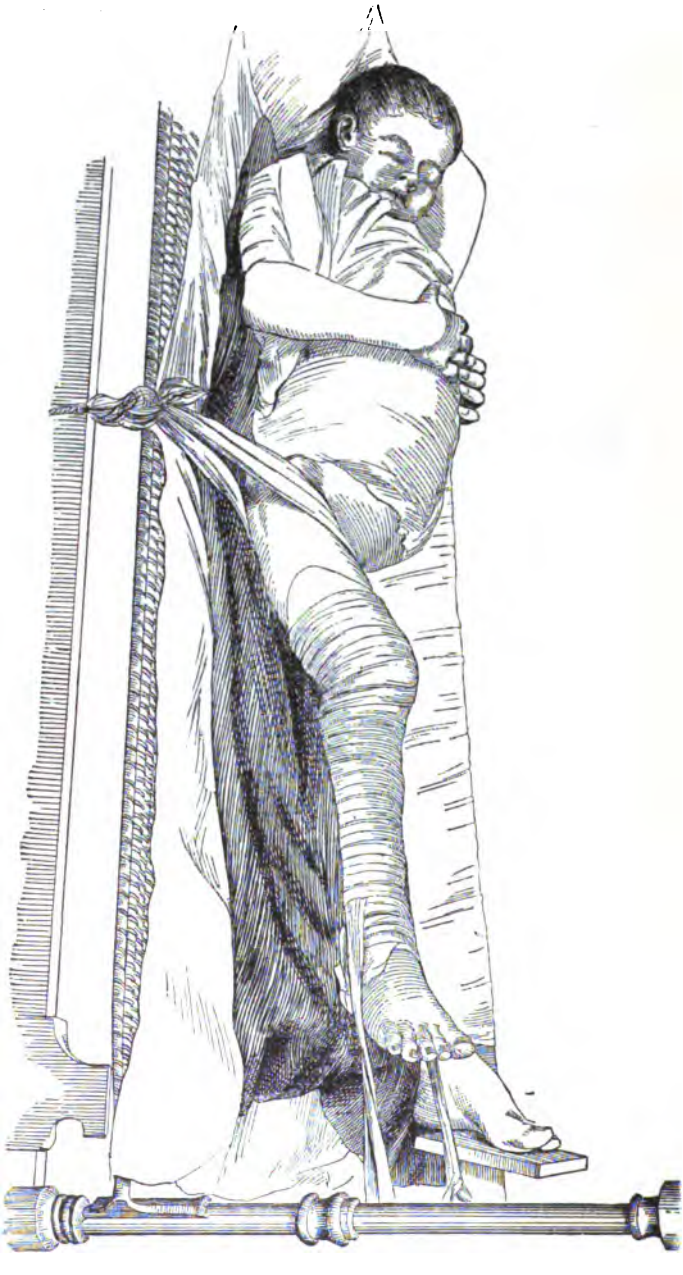

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Fig. 4.

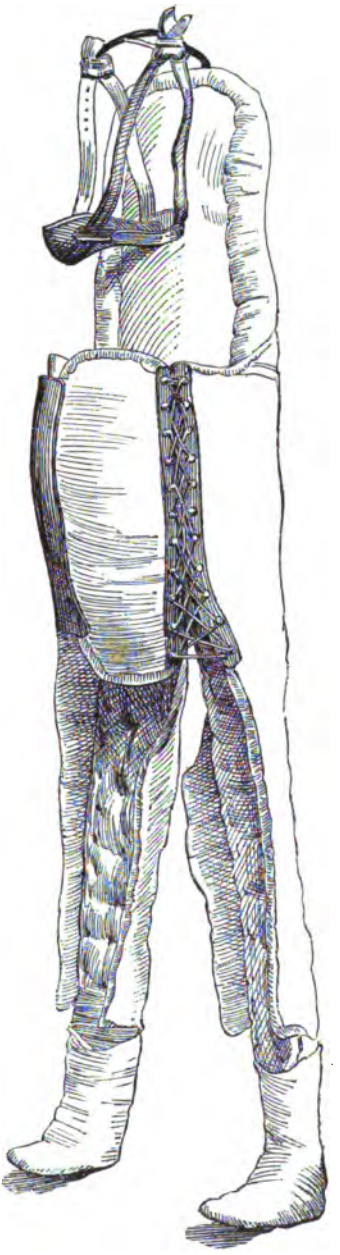
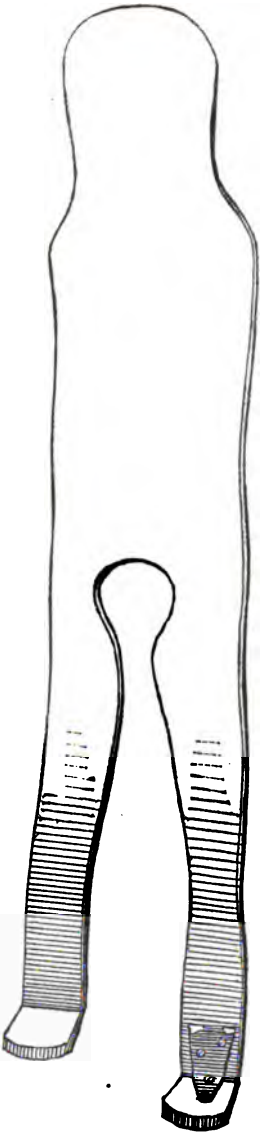


Fig. 5.



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be good practice. But during the active stage of hip-joint disease, whether it is in the first, second, or third, the patient should be put to bed with the two lines of extension and fixation dressing until the active symptoms and deformity have entirely disappeared, and the spasm of the muscle is no longer present. Then, in small children they should be put into a Sayre's wire cuirass, or the portable bed with the two lines of extension, such as I show you here (Fig. 4). The jury-mast is adjusted only in cases of spinal caries, cervical or dorsal.

A board is cut to correspond to the length and width of the child (Fig. 5). This is carefully padded. The child is now laid on the board and enveloped with a plaster-of-Paris bandage from the feet to the axilla to a thickness of three-eighths of an inch. When the plaster is set the front is cut away. This bed can now be lined and a front put on it and lacings put in, or the child can be held in place by means of bandages. As the plaster bandages are rolled on they should be nailed to the edges of the board, thus making the board and plaster one. This bed will be found to fit better, be much lighter, and more convenient to make than the wood cuirass. Extension is made to the foot-piece, and lateral extension by cutting away the side a little and putting in a staple (see Fig. 6), to which the bandage is tied.

The portable bed possesses nothing superior to the wire cuirass to recommend it, only its cheapness, costing, as it does, about three dollars; and then a skilled mechanic is not required—any practitioner would be equal to the task. This will enable the mother or nurse to carry the child about, and the hip-joint is perfectly immobilized by fixation and extension applied in the proper lines. After the storm has passed and the legs are parallel, then a splint such as I here present can be applied, putting the patient upon crutches, with a high shoe on the well leg, or when he is convalescent allowing him to walk upon this hip-crutch. (Figs. 7 and 8.) The splint restricts the normal movements of the joint. The lateral extension combined with the longitudinal makes traction upon the joint in a line corresponding to the axis of the neck of the femur. This splint embraces the fixation principle of the Thomas splint and the extension of the ordinary hip-splints, and, in addition, applies a tension in the proper line—that is, in a line with the neck of the femur.

Every stage of hip-joint disease should be treated precisely the same, with certain modifications, beginning the treatment in bed,

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Fig. 6.

applying extension and fixation as previously described until the two limbs are parallel, and as long as muscular spasm and evidences of active inflammation are present. No hip-splint should be applied in bed, because it does not so perfectly extend and immobilize the joint as the means which I have just described. All abscesses should be incised, cutting them their entire length, scooping them out thoroughly, putting in drainage to the point of disease, and entering the joint if the disease is to be found within the capsule; in fact, thoroughly washing, scooping, and cleaning out the joint. A large number of abscesses of the hip-joint are absorbed, but from the fact that one can never tell, but simply give a likely guess as to which abscess will burrow and form sinuses leading to the consequences of pus-absorption, I believe that it is a better rule to operate upon every abscess, noting an occasional exception. When the operation is performed with strict antiseptic precautions, the operator's hands thoroughly cleansed, the skin carefully washed and shaved, the instruments sterilized by boiling for fifteen minutes before the operation in an antiseptic solution, and the dressing and catgut perfectly antiseptic, a rise of temperature following the operation will seldom be seen, but, on the contrary, these patients will take their first meal for weeks after an operation of the kind.

If the advocates of the non-operative interference of these abscesses will designate to us which abscess will be absorbed and which will produce bad results we will cease operating upon such abscesses as will be absorbed; but so long as that line is not drawn, and knowing perfectly well that quite a considerable per cent. of the cases of hip-

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joint disease die from pus-absorption and its consequences, and that no harm will ever follow the cutting for pus if the operation is properly performed, whether it is in a joint, in the muscles, in the

FIG. 7.

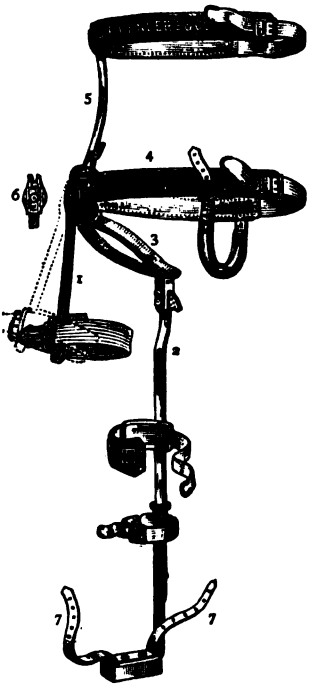

FIG. 8.

Fig. 7 represents the perineal crutch with the abduction bar (1) adjustable by means of the key (6), for the purpose of making lateral extension. The steel bar (2) is adjusted to the steel ring (3), which makes a firm crutch, the pressure coming on the tuberosity of the ischium. Adhesive straps extending to near the body from the ankle, furnish means of extension by tightly buckling them to the straps (7, 7), the ring (3) furnishing counter-extension. The rod (5) ending in the upper ring prevents flexion and extension of the legs. The whole splint is intended to prevent every motion at the hip-joint, and at the same time apply extension in a line with the neck of the bone. Fig. 8 shows the crutch and splint adjusted, the patient using crutches, and standing on a high shoe upon the well leg.

eye, the brain, or any of the great cavities of the body, we should continue to operate as we have in the past. Another advantage—by opening the abscesses the joint can be carefully and intelligently

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explored with the finger, and frequently the head of the bone will be found separated from the neck and loose in the joint. This should be removed, thereby rescuing the patient from the danger of "spontaneous excision," of which we so frequently hear. Hip-joint disease should also be cured without angular deformity. Patients in whom deformity exists, unless proper extension does not overcome it, should be at once operated upon either subcutaneously or by open incision, and such tissues divided as will allow the limb to be replaced in a normal position.

Cases of false or true ankylosis of the hip at a bad angle are better corrected by osteotomy through the lesser trochanter. Cases of dislocation should be excised, or osteotomy performed, when subcutaneous division of the muscles will not readily overcome the deformity.

When operating upon abscesses all dead bones should be removed. If the neck and head should be found diseased, excision should be most certainly performed. Distention of the capsule by pus or synovial effusion should be relieved either by aspiration or incision; then the traction forces will not produce pain.

To conclude, my observations lead me to believe that the most serious element of destruction in hip-joint disease is the trauma and pressure produced by the spasm of the muscle; that tubercular will recover as surely as non-tubercular joints, if the spasm of the muscle is overcome; that fixation of the joint without extension is an impossibility; that the successful treatment of the joint must depend upon its absolute immobilization, which can only be produced by proper extension and fixation; that the constitutional treatment of hip-joint disease amounts to but little, independent of mechanical treatment; that the mechanical treatment is everything; that extension in a line with the axis of the shaft and deformity alone in hip-joint disease is entirely wrong; that extension should be made in a line corresponding to the axis of the neck—in other words, two lines of extension—otherwise, the idea of extension is not perfectly carried out; that ankylosis of the joint is not produced by its immobilization, but by the severity of the inflammation; that the long traction hip-splints in general use neither properly extend neither do they immobilize the joint; that the intra-articular pressure results in the destruction of the joint or ankylosis in the majority of cases; that the results of hip-joint disease should be as good as those of knee-joint disease, and will be,

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provided perfect immobilization can be carried out; that the surgical law in regard to abscesses should not be violated in the treatment of abscesses of the hip-joint; that nearly all cases should be treated for a time in bed; that when the limbs are parallel and the active symptoms have subsided the hip-crutch can be given adults with crutches, and children the portable bed, and, finally, after convalescence, the hip-crutch, either with or without the high shoe and crutches.

DISCUSSION.

Dr. V. P. GIBNEY, of New York: Dr. Phelps's splint seems to me to be one having many advantages. A practical point to be insisted on is the protecting the joint against trauma. It may be a groundless objection, but in the attempt to immobilize and fix the joint by a splint of this kind, the patient may be prevented getting necessary change of air and climate. The more we come to recognize and treat this disease as a tuberculosis of the head of the femur primarily, and sometimes a tuberculosis of the pelvis, the more will we aim to construct an apparatus so simple that it can be managed by the patient himself, by his friends, or local physician, with the view of giving him the benefit of outer air and change of climate. It is useless to talk of tubercular and non-tubercular disease of the hip-joint; it is sufficient for the patient to call it tubercular disease and to realize that it is difficult to manage and requires a long course of treatment. I hope that Dr. Phelps, who has now had a considerable experience with cases of this class, will bring to the next meeting statistics showing what he has accomplished with this special form of apparatus, and also in his operative treatment of abscesses.

Dr. JOHN RIDLON, of New York: We are told that traction is used for the purpose of relieving muscular spasm, and the intra-articular pressure dependent upon it. Upon this involuntary muscular spasm, more than upon anything else, do we depend for our diagnosis in hip disease. Now, if it should appear that this involuntary muscular spasm is a symptom of bone disease, rather than of articular disease, the importance of traction to relieve intra-articular pressure would be less. We know that the primary tubercular focus is generally treated in the bone, and in most cases in the neighborhood of the epiphyseal line; that these show the involuntary muscular spasm in the most marked degree; that when pathological subluxation has occurred in connection with hip disease, and when the head of the femur is no longer in contact with the acetabulum, the involuntary muscular spasm still persists, and that in the superficial joints, as the knee and ankle,

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primary tubercular synovitis does not give involuntary muscular spasm as one of its symptoms. Can we better treat local bone disease by traction, in any direction whatsoever, or by fixation—*i. e.*, physiological rest, of the part? My experience leads me to believe that fixation is necessary in all cases, but that traction is necessary in only a certain number, and then not to relieve intra-articular pressure, but as a means to relieve temporarily muscular irritability. Dr. Phelps's manner of applying lateral traction against the adductor muscles seems to me to act favorably because it allays their irritability, and not because it tends to separate the articular surfaces. But I would not agree with him in advocating its use in connection with a walking apparatus. Indeed, so long as traction in any form seems to be indicated I am accustomed to advise rest in the horizontal position, if it can be had without detriment to the general health. Published results of the use of the portative traction apparatus in this country show that almost all cases of hip disease recover with some flexion and some adduction. Whereas by proper fixation of the limb, by rest in a horizontal position for a sufficiently long time—*i. e.*, until the involuntary muscular spasm is no longer sufficient to induce flexion, all cases can be cured without other deformity than the actual shortening, which comes from bone erosion and lack of growth.

Dr. PHELPS, of New York: I think I have stated that these cases are nearly all tubercular. I have also seen many of them that were not tubercular. I am sure some of them were not tubercular, because the microscope proved it.

As regards the question of making extension in bone disease, I think that if my paper shows anything it shows that intra-articular pressure will produce disease of the joint in cases beginning as extra-capsular disease. This produces inflammation which will destroy the head of the bone. If extension is properly applied it must be at right angles with the leg, or in an axis corresponding with the neck of the bone and not with the shaft. Many a case that cannot be relieved be extension in the line of deformity, can be by the two lines of extension with fixation.

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XXXIV. Cranial Measurements in Twenty Cases of Infantile Cerebral Hemiplegia.

By FREDERICK PETERSON, M.D.,
AND
E. D. FISHER, M.D.,
NEW YORK.

PART I. BY DR. PETERSON.

Some time ago I had the honor of reading before the New York Neurological Society an article upon the subject of craniometry,[1] embodying some of the results of my own labors in this field for some years as well as those of the invaluable researches of other investigators. Among the tenets of this paper was one that every segment of the skull represents some particular part of the brain lying beneath it, and that though single convolutions may have no very marked influence upon the external configuration of the cranium, yet groups of convolutions do modify the shape of the skull, do possess visible representation upon its outer surface. Thus the parietal eminences correspond to the sensory-motor cortical areas; the dimensions of the forehead are directly related to the higher intellectual substrata of the frontal lobes; the sight memories of the occipital and the auditory memories of the temporo-sphenoidal lobes undoubtedly modify the curves and expanse of the cranium lying contiguous to them. Benedikt[2] showed in one case a depression of the left temple in congenital aphasia. Abnormal smallness of any part of the skull is indicative of imperfect development of brain in its neighborhood. It has long been known that deformities of the skull and brain are often produced by premature synostoses of one or more sutures, a discovery we owe to Virchow. But an arrest of development in any centre of ossification, or in any part of the brain, a unilateral aplasia or hyperplasia of the skull bones or of the contents of the skull, will lead to similar malformations.

Benedikt called attention to the frequency of leptocephalus and macrocephalus in hemiplegia and paraplegia spastica infantilis, and

[1] Some of the Principles of Craniometry Med. Record, June 23, 1888.
[2] Kraniometrie und Kephalometrie, 1888.

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to the frequency of asymmetry in the first-mentioned disease. On examining some of these cases of infantile spastic hemiplegia myself, I found the asymmetry mentioned by Benedikt, and saw that it was due, as a rule, to diminution of the size of the skull on the side opposite to the paralysis. I published in my paper two cephaloscopic illustrations of the horizontal and binauricular arc in such a case, where with a congenital right hemiplegia there was a very markedly diminished left side of the skull. This is here reproduced as No. XX. in this collection.

Through the kindness of Dr. Fisher, I have been permitted to draw upon his large material at the New York City almshouse for eighteen cases of hemiplegia, either congenital or occurring in the first two or three years of life, previous to sutural union and to the perfect evolution of the skull. They had all attained the adult age, the average being twenty-seven years.

The cranial measurements and drawings of these, together with those of two of my own, make the twenty which are here presented to-day.

The cephalometrical figures and drawings were obtained according to the methods I described in the paper already alluded to, and the series of measurements is one that I have selected and arranged in the accompanying tabular form.

I have carefully selected the above-named arcs and diameters from the immense number given by various anthropologists, and believe that they are sufficiently simple for use by any physician who desires to make a scientific cephalometrical study of any head. They are the most important measurements in the lists of Benedikt, Broca,[1] and Török.[2] At the same time I am aware that the results from a large number of measurements would be more accurate and useful, although not, I think, revealing the pathological variations better.

Of the twenty hemiplegics in this collection, eleven are adult males, eight adult females, and one a boy. Thirteen are right and seven left hemiplegics. The following is a table of the measurements of their heads as compared with the average normal male and female heads and the standards of physiological variation.

As regards the circumference, I find that all but five of the twenty—one man and four women—are below the normal aver-

[1] Instructions craniologiques de la Société d'Anthropologie, et al.

[2] Ueber ein Universal-Kraniometer.

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Comparative Measurements in Tabular Form of Normal Male and Female Heads, and those of Twenty Cases of Hemiplegia Spastica Infantilis.

	Normal Head.			Men.												Remarks.	Women.								Remarks.	Boy
	Average in adults in centimetres.		Physiological variation	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	Men's average.		XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	Women's average.		XX.
	M.	F.																								
Circumference,	55	53	51.5–60.4	55.3	53.5	54.0	54.0	53.0	51.0	54.0	53.0	54.5	54.5	54.0	53.7	Below normal average.	53.5	48.5	51.5	53.0	52.0	54.0	51.5	51.5	52.3	Below normal average.	47.0
Volume,	1500	1300	1201–1751	1508	1480	1472	1472	1455	1390	1472	1455	1486	1486	1472	1466	Below normal average.	1310	1128	1261	1298	1274	1323	1261	1335	1281	Below normal average.	1151
Naso-occipital arc,	35.0	34.0	31.0–41.0	36.5	35.0	34.0	34.0	35.0	32.0	35.0	24.5	37.5	34.0	33.0	34.5	Below normal average.	32.5	30.0	32.0	32.0	31.0	34.0	34.0	31.5	32.1	Below normal average.	31.0
Naso-bregmatic arc	12.5	12.0	10.9–14.9	12.0	13.0	12.0	11.5	12.5	12.5	13.5	13.0	13.0	13.0	13.0	12.6	Above normal average,	11.5	10.0	11.0	10.5	11.0	12.5	12.0	12.0	11.3	Below normal average.	9.7
Bregmato-lambdoid arc,	12.5	11.9	9.1–14.4	12.0	13.0	13.0	12.5	13.0	10.0	10.5	11.0	12.0	15.0	13.0	12.2	Below normal average.	14.0	12.5	12.0	12.0	12.0	12.0	11.0	12.0	12.1	Above normal average.	8.6
Binauricular arc,	35.0	34.0	31.4–38.0	35.5	35.0	32.0	33.0	35.0	35.0	33.0	33.5	34.5	36.0	35.0	34.3	Below normal average	30.0	31.0	31.5	35.0	31.5	33.5	33.5	35.0	32.6	Below normal average.	29.0
Antero-posterior diameter,	18.7	18.2	17.5–20.0	19.4	18.1	18.9	18.3	18.0	17.3	18.5	18.1	18.9	18.0	17.5	18.2	Below normal average,	18.6	16.8	18.0	17.5	17.9	18.7	17.9	17.9	17.9	Below normal average.	16.3
Greatest transverse diameter,	15.6	15.0	14.0–17.5	14.4	14.0	14.3	14.0	15.2	13.9	14.5	13.8	14.5	15.5	15.0	14.4	Below normal average.	14.0	13.5	14.0	14.7	14.0	14.4	13.9	15.7	14.2	Below normal average.	13.1
Length-breadth index,	82.2	83.8	76.1–87.0	74.2	77.3	76.0	76.5	84.4	80.3	78.3	76.2	76.7	86.1	85.7	79.2	Below normal average.	75.2	80.3	77.7	84.0	79.8	77.0	77.6	87.7	79.9	Below normal average.	80.3
Binauricular diameter,	13.1	12.6	11.6–14.6	11.5	12.3	12.4	11.5	13.0	11.4	12.0	10.8	12.2	12.8	12.8	12.0	Below normal average.	11.5	11.0	11.3	11.8	12.0	11.5	11.0	11.5	11.4	Below normal average.	10.1
Height, βx,	12.2	...	10.5–13.1	13.5	12.5	12.0	12.0	12.4	12.8	12.0	12.3	12.5	13.0	13.1	12.5	Above normal average.	11.6	11.2	11.0	12.3	11.5	11.6	12.0	12.2	11.6	.....	11.1
Facial length,	12.4	...	10.5–14.4	12.0	12.0	13.0	11.6	12.0	12.1	12.5	12.2	12.2	11.4	13.0	12.1	Below normal average.	12.0	10.8	9.9	11.6	11.5	10.2	11.1	11.4	11.0	.....	9.0
Empirical greatest height,	13.8	12.8	12.0–15.5	15.2	13.2	13.0	12.3	14.0	12.6	13.5	13.4	14.5	14.4	13.0	13.6	Below normal average.	12.8	11.5	12.3	12.3	11.3	12.5	12.7	12.7	12.2	Below normal average.	

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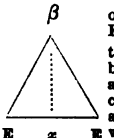
TABLE OF CRANIOMETRICAL MEASUREMENTS.

	Average in adult, in centimetres.		Physiological variation.	Remarks.
	Males.	Females.		
1. Circumference	52	50	48.5–57.4	Roughly approximated, the volume is to the circumference as 1350 ccm. is to 50 cm.
2. Volume	1500	1300	1201–1751	
3. Naso-occipital arc	32	31	28–38	In figure, *n* to *t*.
4. Naso-bregmatic arc	12.5	12	10.9–14.9	*n* to β.
5. Bregmato-lambdoid arc	12.5	11.9	9.1–14.4	β to *a*.
6. Binauricular arc	32	31	28.4–35	
7. Antero-posterior diameter	17.7	17.2	16.5–19	*s* to *o*.
8. Greatest transverse diameter	14.6	14	13–16.5	The formula for the length-breadth index is Length : breadth : : 100 : *x*.
9. Length-breadth index	82.2	83.8	76.1–87	An index below 78 is dolichocephalic, 78 to 80 mesocephalic, above 80 brachycephalic.
10. Binauricular diameter	12.4	11.9	10.9–13.9	The height βx of the triangle EβE formed by the auriculo-bregmatic radii and the binauricular diameter, averages 11.7, with a variation from 10 to 12.65.
11. Auriculo-bregmatic radii	.....	.....	.....	
12. Facial length	12.37	.....	10.5–14.4	From root of nose, *n*, to lowest part of chin.
13. Empirical greatest height	13.3	12.3	12.5–15	The empirical greatest height $b\beta$ is obtained by measuring the sides of the triangle *m*βt.



These measurements are those of the adult human skull. As the hair and scalp superadd about three cm., about six per cent. should be deducted in the head measurements Nos. 1, 3, and 6, to obtain those of the skull. In taking the diameters Nos. 7 and 8, deduct one centimetre (the scalp averaging 5 mm. in thickness), and from the shorter radii, such as Nos. 10 and 11, subtract but 7 mm.

ages, while two—one man and one woman—are even below the limit of physiological variation, and two women just at the lowest point of variation. It is to be borne in mind that some cases exhibit distinct macrocephalus, although that is not present in any of these. Benedikt considers it quite frequent and due to hydrocephalus. The only man in this collection presenting a circumference above the average had but three millimetres in addition, and of the four women, one was exactly the average, and the highest excess was 1.5 cm. Taking the averages of the eleven men and eight women, we find the aggregate below the averages of the normal male and female heads.

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As the empirical determination of the *volume* depends upon the circumference, what has been said of the latter applies with equal significance to the former.

The naso-occipital arc is diminished in six men and six women, while one woman is below the physiological variation. The averages of the eleven men and eight women are under the normal averages of the two sexes.

The naso-bregmatic arc is below the normal averages in three men and five women, but the average of the eleven men is one millimetre above the normal, and that of the eight women seven millimetres below. Two women are so low as to be outside of the physiological variation.

The bregmato-lambdoid arc is under the normal in five men. The average of the eleven men is below, and that of the eight women four millimetres above the normal sexual averages. It is this arc which Benedikt claims is diminished in cases of ordinary epilepsy, but this probably does not apply to the meta-hemiplegic variety exhibited in seventeen of these cases.

The binauricular arc is diminished in five men and six women, the total averages of each sex being also below the normal standards. Two of the women are under the extreme of physiological variation.

The antero-posterior diameter is less than the normal averages in eight men and six women, and below the physiological extreme in one man and one woman. The total averages of the eleven men and eight women are below the normal sexual standards.

The greatest transverse diameter is below the normal average in all the men and all but one of the women, showing the tendency toward leptocephalus, or narrow-headedness, in this form of hemiplegia pointed out by Benedikt. Under the physiological variation are four men and two women, or more than thirty per cent.

As regards the relation of length to breadth, the length-breadth or cephalic index, eight men and six women are below the average. Six men and four women are dolichocephalic, one man and two women mesaticephalic, and four men and three women brachycephalic. Two men and one woman exhibit dolichocephaly outside of the physiological variation, while one woman presents pathological brachycephaly. Taking the average of the cephalic indices of the nineteen adults, they are all below the average brachycephalic condition and are mesaticephalic.

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The binauricular diameter is under the normal standards in all the men and all the women. This being but another transverse diameter, corroborates the result of the measurements of the greatest transverse diameter, viz., the inclination to leptocephalus before mentioned. In four men and six women, or more than fifty per cent., this tendency is so marked that the binauricular diameters are actually outside of the physiological extremes.

The height bregma-x is diminished in three men and pathologically increased in one. Unfortunately, there is no normal female average as yet determined with which to compare the women.

The facial length is below the average in nine men. We have as yet no statistics as to the normal average in women.

The empirical greatest height is under normal standards in seven men and seven women, and the total averages diminished in all nineteen. Two women present pathological minima.

There are no accurate data accumulated as yet with regard to normal standards in infancy and youth; hence the measurements of the boy's head do not admit of comparison.

In many of the cases unusual prognathism is apparent in variable degree, and in some are deformities of the palate and jaws.

Now, if each case be examined singly with reference to normal cephalometrical standards, we find that pathological conditions stand out more prominently than in the aggregate analysis.

Case I., which in many of its measurements surpasses the normal average and which is the greatest of the twenty cases in circumference and volume, exhibits pathological variation in the cephalic index (74.2), binauricular diameter (11.5), and height (βx 13.5).

Case III. presents pathological divergence in the cephalic index (76).

Case IV. has a binauricular diameter outside of the pathological limits (11.5).

Case VI. exhibits pathological variation in the antero-posterior diameter (17.3), greatest transverse diameter (13.9), and binauricular diameter (11.4).

Case VIII. shows an abnormal divergence from the physiological limits in the greatest transverse diameter (13.8), and in the binauricular diameter (10.8).

Case X. presents pathological excess in the bregmato-lambdoid arc.

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Case XII. is pathological in its binauricular arc (30), cephalic index (75.2), and binauricular diameter (11.5).

Case XIII. exhibits pathological variation from normal standards in circumference (48.5), volume (11.28), naso-occipital arc (30), naso-bregmatic arc (10), binauricular arc (31), antero-posterior diameter (16.8), greatest transverse diameter (13.5), binauricular diameter (11), and empirical greatest height (11.5)—in fact, most of the measurements.

Case XIV. is pathological in its binauricular diameter (11.3) and facial length (9.9).

Case XV. presents an abnormal minimum in the naso-bregmatic arc (10.5).

Case XVI. is pathological in its empirical greatest height (11.3).

Case XVII. shows morbid deficiency in the binauricular diameter (11.5) and facial length (10.2).

Case XVIII. exhibits pathological variation in the greatest transverse diameter (13.9) and binauricular diameter (11).

Case XIX. is pathologically excessive in the cephalic index (87.7) and deficient in the binauricular diameter (11.5).

From this it will be seen that all of the cases taken in the aggregate have skulls which fall below the normal average in nearly every measurement, while in fourteen of the nineteen cases the variation is outside of the physiological limits in some of the arcs or diameters.

Besides the mathematical data, three cephaloscopic delineations were taken in each case. The naso-occipital arcs are drawn in such a manner as to give an almost composite view of this arc in each sex, and the slight deviations that exist are perceptible at a glance. Their only value is merely for comparison with normal standards, from which they differ chiefly in length, and hence they are not reproduced here.

The horizontal circumference was taken through the points which give the antero-posterior diameter—viz., around the glabella and the maximum occipital point about an inch above the occipital protuberance. Although this is somewhat below the arcs which would be described around the mid-region of the motor areas, and which would naturally better characterize the pathological change of cranial outline, yet in every one of these drawings a variation is observable between the right and left semicircles, in some slight and in others very marked, the diminution being always on the side of the

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lesion, and therefore opposite to the paralyzed half of the body. The fact of the existence of epilepsy in cases of hemiplegia is probably significant of an irritative and not a destructive lesion of the cortex; and hence it is natural to infer that the unilateral differences in the brain and skull would be greater in such hemiplegias without epilepsy.

The binauricular arcs were taken, as usual, between the anterior rims of the auditory meatuses, and, by their greater contiguity to the motor areas, present rather more distinctly the unilateral differences than do the right and left horizontal semicircles. Each binauricular arc exhibits a diminished quadrant on the side of the lesion. The pathological variations in the quadrants are often more marked in these cases when the arc is described behind the auditory meatuses from one mastoid process to the other, for thus the chief portions of the Rolandic areas are traversed; but the arcs taken are a sufficient demonstration of the facts stated.[1]

In conclusion, I would make the following summary:

In all of these cases of hemiplegia spastica infantilis the skull is more or less diminished in size on the side opposite the paralysis.[2]

There is a pronounced tendency to diminution in all dimensions and capacity. This is so marked in the transverse diameters as to bring these heads under the class of leptocephalus.

While all of the heads are below the normal averages, more than seventy-three per cent. are actually below the lowest limit of physiological variation in some of their dimensions.

The value of this contribution to craniometric literature, then, from an anthropological point of view, lies in its determination of the intimate relationship existing between portions of brain and adjacent cranial areas; from a psychological point of view, in its proving or assisting to prove the interdependence of small-sized heads and mild degrees of feeble-mindedness, congenital or acquired in infancy.

Upon my co-worker, Dr. E. D. Fisher, now rests the burden of relating the clinical features of these cases, conjecturing as to their

[1] None of the illustrations are reproduced here, but they will all be found in this article as printed in the New York Medical Journal of April 6, 1889.

[2] This tendency to a depression of the cranial vault on the side of the lesion in these cases is sometimes more or less counterbalanced by a thickening of the bony parietes upon that side, as was long ago pointed out by Van der Kolk (New Sydenham Society Transactions).

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pathology, and drawing the practical inferences from the work which may make craniometry of interest and use to the general practitioner.

PART II. BY DR. FISHER.

The clinical aspect of these cases and the conclusions resulting from their records I shall now attempt to lay before you. They consisted, as the table below shows, of twelve males and eight females. They were all typical cases of hemiplegia spastica infantilis. The fact that all except four were associated with epilepsy is probably due to the fact that they were taken from the almshouse, where for that reason they had probably been sent, as, although epilepsy is very frequent in these cases, it is not in so great a proportion as this list would seem to indicate.

No.	Name.	Age.	Hemiplegia.	Epilepsy.	Mental state.	Time of onset.	Jaw and palate.
I.	John W.	32	Left.	Present.	Imbecile.	At 3 years.	Normal.
II.	Martin K.	29	"	"	"	At birth.	"
III.	John H.	36	Right.	"	"	At 3 years.	"
IV.	Patrick D.	22	"	"	"	At birth.	High palate.
V.	Michael M.	23	"	Absent.	Weak-minded.	At 2 years.	Normal.
VI.	George Y.	23	"	Present.	Imbecile.	Infancy.	"
VII.	William H.	27	"	"	"	"	"
VIII.	F. F.	26	Left.	"	"	"	"
IX.	George T.	26	"	"	"	"	High palate.
X.	Henry H.	18	Right.	"	"	"	Normal.
XI.	John K.	20	"	"	"	"	"
XII.	Mary T.	29	"	"	"	"	"
XIII.	Mary W.	26	"	"	"	"	"
XIV.	Mary G.	32	Left.	Absent.	"	"	"
XV.	Kate W.	28	Right.	Present.	"	"	"
XVI.	Ida C.	33	Left.	"	"	"	"
XVII.	Mary C.	17	Right.	"	"	At birth.	"
XVIII.	Sarah K.	30	"	"	"	Infancy.	"
XIX.	Louise W.	33	Left.	"	"	At birth.	"
XX.	Frank L.	6	"	Absent.	"	"	"

It is seen that four cases date from birth, the rest from early infancy; high palate and prominent lower jaw were present in two cases; in thirteen out of twenty the right side was affected; in many, athetoid or choreiform movements with intention tremor existed; and in all imbecility or weak-mindedness. The capacity of the cranium is reduced in most of the cases; the bregmato-lambdoid arc is not, however, lessened, as I would have been led to expect from measurements reported in idiots and epileptics. (See table of cases.)

We must consider that these cases have had their origin either in the embryonal period or in infancy. In the first class we find many of the same lesions as in idiocy or imbecility without hemi-

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plegia: porencephalus, absence of the corpus callosum, of the middle commissure, intra-uterine meningitis, meningeal hemorrhage, sclerosis following hereditary syphilis, osteal malformations—as irregular growths of the sphenoid bone; again, emotional pathological condition of the mother during pregnancy, injuries from blows, jars, etc., during fœtation, but limited to one side.

Richter, in Virchow's *Archiv*, vol. cvi., says that in idiocy the sagittal suture is frequently very short, and that the sphenoid bones may unite at an abnormal angle, leading to malformation of the corpus callosum or to porencephalus, which is often unilateral. In porencephalus the subject rarely reaches middle life.

Biswanger, in Virchow's *Archiv*, vol. cii., gives the history of such a case, the marked symptoms being right hemiplegia, epilepsy, and imbecility.

The etiology of cases occurring at birth or in infancy is again quite varied. First in importance I would place prolonged labor, a very large proportion of children who require resuscitation becoming imbeciles, meningeal and capillary hemorrhage being produced by pressure in the maternal passage.

It is probable, from careful investigation, that the use of the forceps has little to do with causing these cases, but, on the contrary, its delayed employment or non-use more often results in danger to the child. The falls of childhood in an hereditarily predisposed constitution—as from alcoholism, tuberculosis, hereditary syphilis, etc.—are no doubt exciting causes in many instances. We must refer to the exanthemata acting either directly by extension of inflammatory changes to the meninges—as in otitis from scarlet fever—or indirectly on a vitiated constitution. Encephalitis and cerebral hemorrhage or embolism are rare at this age, while tumors present characteristic symptoms of their own.

In *Brain*, April, 1888, Beach and Warner report an interesting case of chronic meningitis, probably syphilitic, the lesion being bilateral, although most marked on one side. It presented a very common symptom in idiocy—namely, viciousness—which I have not observed in any of these cases. Mr. E. Powell, in the *British Medical Journal*, June 30, 1888, reports a case of cerebral atrophy and hemiplegia. He showed a specimen of brain atrophy from an imbecile woman, aged forty-six, who had been epileptic and hemiplegic on the left side since she was three years and a half old. At that age she had a "fit," was totally blind for seven weeks,

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when she gradually recovered her sight, but remained hemiplegic. Post-mortem examination showed complete atrophy of the right occipital lobe, considerable atrophy of the ascending convolutions, the fusiform and lingual lobules—the angular gyrus being apparently healthy.

The changes occurring in the brain as consequent upon the lesions given in the etiology of these cases are atrophy of the cerebrum and increase of the connective tissue, with descending degeneration extending into the spinal cord.

The sclerosis of the brain may be focal, diffuse, or multiple; the cortex cells are often degenerated, their processes lost, and their number decreased.

The association fibres are probably destroyed, leading thus to loss of judgment or reason. Many idiots possess certain talents, such as knowledge of music, drawing, etc., but the general intelligence in these cases is no greater than in the others.

Zilgerson (*Brain*, July, 1887), in an examination of five cases of idiocy, was struck by the great influence which the degree of development of the great hemispheres has on the evolution of the crura cerebri, a primary severe lesion of the cortex in the embryonal period or in earliest childhood causing secondary degeneration and inhibition of evolution in certain parts of the crus. In three cases hemiatrophy of the brain was demonstrated, and in two others alteration of the crus cerebri was very evident. In four cases atrophy of the cerebellum of the opposite side was observed.

In a case presenting the usual symptoms of this class—*i. e.*, right hemiplegia, epilepsy, and imbecility—I found post mortem the left ventricle very much enlarged and filled with fluid, and macroscopically a considerable atrophy of that side of the brain.

In these cases the transverse arc was found decreased, or, in other words, they were narrow-headed, the temporal region being thus encroached upon. This might in a degree explain the slowness of comprehending questions, and also the imbecility, as lesions in the temporal convolution produce word-deafness.

I cannot refrain from referring to a point of great importance in children, and this is, that any interference with hearing, and, therefore, a clear comprehension of sounds and words, may lead to a considerable amount of mental weakness.

It will be observed that all the cases, with one exception, are

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adults, and that the volume of the skulls, with one exception, is reduced.

Sommer, in Virchow's *Archiv*, vols. lxxxix. and xc., found in the insane that the volume was increased, differing in his records from Gall and Welcker.

The cause of this difference in volume must lie either in the increase of the diameters of the skull or in its conformation. According to Virchow, it is in the latter. (See "Entwickelung des Schädelgrundes.") In the insane skull it is the inability to make the measurements conform to any standard rather than that they have any particular measurements peculiar to insanity.

We have in our cases not only the capacity of the skull affected, but opposite to the hemiplegia a constant decrease in the size and conformation. It is not forgotten by the writer that many normal cases present wide variations in cranial measurements, yet we get at an average which differs from the average in these twenty hemiplegias. Although the number of cases is not great, still, as the results are always the same, it is sufficient to draw the conclusion that congenital or infantile cerebral defect is accompanied by a corresponding cranial irregularity.

Again, in ordinary idiocy, Down has been able to refer the cases of certain types to the lower races, so that in many instances they approach the Mongolian type, even with the characteristic almond-shaped eyes. He finds, also, and makes his diagnosis of the congenital origin of this condition rest on the presence of, an abnormally high or cleft palate, a prognathous jaw, etc. Now, in these twenty cases we find but two with abnormally high palates and prominent jaws. This would lead us to infer, if we agree with the theory of Down, that the cause must have been effective more often at birth or in infancy than during intra-uterine life, and in this I believe the pathology of the disease will bear us out.

An interesting point to the practitioner then arises, in these cases of one-sided affection of the cerebrum, whether or no, as the disease is one of early life, it is not possible to develop by education the opposite half of the cerebrum, and cause it to take on the functions of the undeveloped hemisphere. I would certainly try to train the hand of the opposite side to as great a degree as possible.

The kindergarten system of object-teaching should be carefully carried out, and especially should these little patients be thrown in with other children of like age in respect to intelligence. The diet

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should be rich and nourishing. Much can be done for the paralyzed member to improve its nutrition by massage and galvanism.

DISCUSSION.

DR. W. E. FORD, of Utica: This is a very interesting subject, especially the pathology of the affection. The management of the cases so as to develop the deficient portion of the brain I think is very important. I have under care a boy who, when five years of age (he is now sixteen), was supposed to be an imbecile. He showed a strong tendency to disobedience, and paid no respect to his father, who is an intelligent man, and comprehended the argument used, that by a special course of physical as well as mental training the boy might be made a fairly useful citizen. It is interesting to note how the combination of muscular training with a certain amount of mental calisthenics has developed this boy, now about sixteen years of age. He is just now capable of going to the public schools. He certainly has very quick perceptions in certain directions. He is not, of course, symmetrically developed mentally. In mathematics he far excels the majority of boys, or even of men; in the acquisition of language he has a wonderful gift; yet he still has epileptic seizures, is still deformed. One side of the body has simple contracture of the muscles, which has remained since the treatment began. But the treatment, which is the interesting part of the case, has now lasted over ten years, and has consisted in systematic exercise of those muscles by all sorts of gymnastics and mechanical devices. The father has bought everything suggested to him which could develop any special set of muscles of the leg or arm, and to this he devotes one to two hours every day. The contracture of the legs was such as to make him knock-kneed and prevent him from getting his foot down; but he can now get the knee in a fairly straight line, and walks by the aid of a cane. His mental capability I think is altogether due to the kind of training Dr. Fisher describes, and will make him a very useful man. With regard to the emotions and moral qualities, he is fairly gifted as compared with other boys. He is a little eccentric, but is amenable to the system of rewards and punishments. He shows some affection, which he never manifested until his sixth or seventh year. He can be induced to take his exercises out of love for his father. I think this is the most remarkable example which has come under my observation of making something out of really nothing, and the training which the author speaks of, and the hope which it inspires is a very important thing. This boy is making a fair sort of man, and is certainly a great deal better than an imbecile.

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DR. A. JACOBI, of New York: These demonstrations are undoubtedly a very valuable addition to our knowledge of the subject, and I have not the slightest doubt that Dr. Fisher and Dr. Petersen will continue their researches. There is one fact of interest which doubtless is stated in the paper, although the doctor had not time to read it—namely, the ages of the children. It will be found that only those who were taken either in fœtal life or soon after birth showed these anomalies and great differences; for when hemiplegia occurs after the cranium has ossified—that is, after the child is a year and a half or two years old—there is no great consecutive difference in the two halves. That is quite natural. The changes inside the brain may be ever so great: they will not show outside. Therefore, in every such case affected in later life, or after the second year, the method will not be so conclusive; but for cases which occur previous to that age the method is an excellent one, and certainly the pathology of the subject has been greatly enriched by it.

The authors have gone over the etiology of such cases very well, but there are one or two points to which I would like to draw attention. In children two or three years of age there is one cause which is as common as an original cerebral lesion in earlier cases—that is embolism; the embolus may arise from acquired disease of the heart or may be traced back to the pulmonary vein. It gives rise to local anæmia in the brain, then meningo-encephalitis, and to such results as the authors have described.

Another point which has been alluded to I wish to mention again, because of its practical importance. The authors have said (and it is a fact not generally appreciated) that conditions of hemiplegia, of idiocy, of epilepsy are the result of interrupted circulation at birth. They have said it is not the forceps which has produced hemorrhages as a rule, but it is a fact that in these cases the circulation was impeded toward the end and after a protracted labor. I allude principally to the condition of asphyxia. When a child is aphyxiated only a minute or two, that minute or two may be sufficient to make an idiot, epileptic, or hemiplegic. Therefore, it is so very important that the first care should be taken of the infant. It makes an immense difference whether a baby does not cry for ten seconds, or for forty seconds, or for two minutes. There is a great danger of the whole future of that being if the circulation during asphyxia be interrupted, and all those who are in obstetrical practice are in a position to prevent a great deal of misfortune by attending to the asphyxiated baby immediately.

DR. FISHER: I agree, of course, with what Dr. Ford and Dr. Jacobi have said, as they represent the views which I tried to state. In speaking on so large a subject a great deal must necessarily be left out, and

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because of the limited time I read the paper in abstract only. I think there is no doubt that there are, as Dr. Jacobi has said, cases of idiocy, etc., due to embolism. I also agree with him that where the abnormal form in the skull is observed the lesion occurred before the second or third year. Henoch has stated that these patients seldom live past the twentieth year; but most of those we have observed had attained the fortieth or fiftieth year.

There is a narrowing of the skull in these cases which would, perhaps, explain the defect in speech which has been noticed. Cerebral localization has taught us that certain functions of the brain correspond to certain areas which can be indicated on the skull. In the class of cases under consideration there is narrowing in the region of the temporo-sphenoidal and lower sphenoidal lobes, which would account for the inability of children to understand when spoken to, and for the drawl in their speech if this is acquired. The measurements which we have taken can, I think, be carried out by any one. All meet now and then with irregular shaped skulls in men of great intellectual power; but when we find a group of twenty cases, all with the same lesion and with the same irregularity in the form of the skull, it must mean something—that is, atrophy of the brain at a given locality. It is not as Virchow early stated it—although that is true in some cases—namely, too early closure of the sutures of the skull and consequent compression and atrophy of the brain. We have in these cases atrophy of the brain first, and therefore non-development of bone subsequently.

XXXV. A Case of Triple Cast of the Larynx and Trachea down to the Bifurcation, with Intubation and Recovery.

By WILLIAM HAILES, M.D.,
ALBANY, N. Y.

A CHILD, five and a half years of age, seen in consultation with Dr. Ullman. Showed croupy symptoms October 22d; became rapidly worse, and was intubated on the 27th. She coughed up a cast of the trachea through the tube, see figure (No. 1). It came up in two pieces, and caused considerable dyspnœa and symptoms of strangulation. Patient did not breathe well, and the tube was removed by extractor. Symptoms of stenosis returned immediately, and after a few hours patient was reintubated. She continued restless and feverish, pulse ranging from 150 to 120, temperature 103½° to 101½°, respiration 55 to 35. Casts and albumin in urine and foul patches on tonsils, pharynx, and palate.

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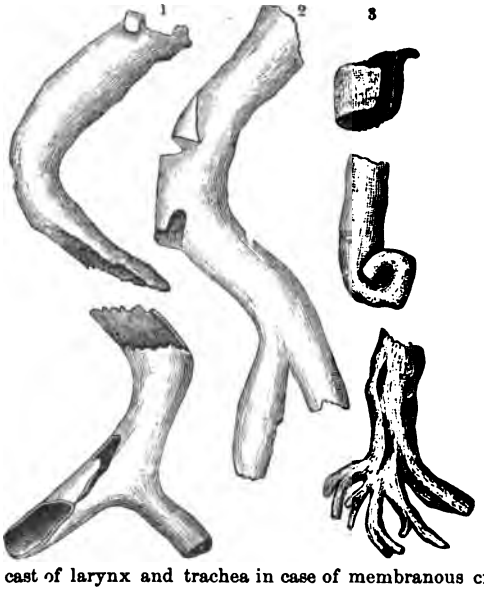
October 25th, respiration became labored and rapid, and a second cast of trachea (see figure, No. 2) was coughed up through the tube; patient was nearly asphyxiated, but succeeded in coughing up the membrane and clearing her larynx. Patient still restless and feverish; temperature 103°, respiration 45.

On Saturday, October 27th, at 1 A. M., the tube again became obstructed by the *third* cast of the trachea (see figure, No. 3). This effectually blocked up the tube, and the patient became cyanotic and in the last stages of strangulation, when the mother of the child inverted her, and by means of her finger hooked out the tube from the larynx, by getting her finger-tip under the head of the tube and starting it out of its place. The pressure of imprisoned air behind it forced it up into the pharynx, and the brave mother grasped it and flung it upon the floor. Stenosis of larynx still present, rapid respiration, etc., but did not find it necessary to intubate again.



Triple cast of larynx and trachea in case of membranous croup.
(Specimens in the possession of Author.)

The after-history of this unusual case is interesting. A severe bronchitis, catarrhal and septic, supervened, and her course toward recovery was slow, complicated by a desquamative nephritis, with casts and albumen in urine, and anasarca of both extremities. She had paralysis of the muscles of deglutition; food, both solids and fluids, came through the nose. She also had strabismus for several weeks. Almost complete aphonia was present.

She finally made a good recovery; her voice is returning, her strabismus has disappeared, she swallows well, and her urine no longer contains albumen nor casts, and, under tonics, etc., is in good condition considering the severity of the ordeal through which she has passed.

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This is the only case of membranous croup in which I have ever seen or heard of the membrane forming three times, and it is curious to note that the period of re-formation of the membrane was about forty-eight hours, the last cast of trachea (see figure, No. 3) being more firm in consistency, and it rolled up into a solid plug (see figure, No. 3, *middle fragment*), and it was this piece which came so near causing the death of the little patient by strangulation.

DISCUSSION.

DR. JOHN O. ROE, of Rochester: The case related by Dr. Hailes was certainly a very interesting one, and I have had none exactly similar. Those cases which I have had of extensive formation of membrane in the trachea and bronchial tubes have terminated fatally. Where the child attempted to cough the membrane through the tube it blocked the passage, and the child suffocated before assistance could be rendered. With regard to removal of the tube, it is very rarely in successful cases that I have an opportunity to remove it myself. When the swelling of the larynx has sufficiently subsided the tube will be coughed out —that is, if a tube of suitable size has been used. If too small a tube is introduced, it will often be coughed out before it should be removed, and will have to be reinserted.

XXXVI. THE LIMITATIONS OF THE INFLUENCE OF THE MIND UPON THE BODY,

BEING A DISQUISITION UPON THE TRUTHS AND DELUSIONS OF PSYCHO-THERAPEUTICS.

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THE reciprocal relations of mind and body constitute one of the most thoroughly apprehended principles of physiology. From the beginning of philosophy—yes, I had almost said, from the very dawn of thought itself—men became conscious of a hand, intangible in its subtlety but none the less real, weaving into indissoluble harmony the life within with the life without, the mind with the body, the seen with the unseen, the overwhelming mystery of conscious individualism with the perturbations of flesh and blood.

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In the earlier stages of the world's history this mystery became the talisman of jugglers, priests, and oracles; with the evolution of speculative philosophy it became the object of some of the loftiest flights of the human intellect; while in modern times the application of the principles of the natural sciences to the elucidation of vital phenomena has given a new direction to current thought.

While, therefore, the physiological psychology of the day has done much to clear away superstition and that crude generalization which is equally disastrous to sane thinking, it must be confessed that much that is barbarous, much that is quixotic, still abides with us. A striking exemplification of the intellectual vandalism which periodically breaks out in societies, even the most civilized, is at present afforded by that curious conglomeration of superstition and grotesque fallacy known variously as the "mind-cure" and the "faith-cure." Armed with a spavined logic, founded upon half truths, a horde of fanatics, ignorant of the most rudimentary principles of medical science, has swept down upon civilized society, which it threatens to overwhelm with a mode of treating disease as quixotic as it is dangerous to the weak-minded votaries of this modern phase of humbug. The expressed belief of these mind-healers, or whatever else they may call themselves, is to the effect that all physical ailments, whatever their gravity may be, originate in an unhealthy condition of the mind itself, and that hence all diseases may be prevented or cured through the mind; for, they add, do not all educated physicians admit the close relationship existing between mind and body; do they not grant that the former exerts a prodigious effect upon the latter? Here is the key which reveals to us the manner in which these impostors gain ascendancy over other dupes. Laying hold upon the recognized fact that the mind does really exert a circumscribed influence upon the body, the faith-healing charlatan ignores all limit, and declares that because emotional excitement may cause a person to grow pale or to become suffused with blushes, therefore an appeal to the mind must bring about a cure of the most incurable phases of organic disease. As a further support to their specious pretensions, they appeal to a fund of well-worn stories of how headaches, hysterical imitations of organic disease, or hypochondriacal delusions, or, in short, minor functional conditions, have been relieved by addressing the therapeutic appeal to the mind. When such evidence has not been enough to convince the incredulous, they have not hesitated

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to resort to limitless mendacity—a mendacity which, though but a grotesque exhibition of depravity in the eyes of thoughtful people, has been sufficient to dupe the shallow reasoner, and to minister to that thirst for sensationalism which is the true birth-mark of mental shallowness. Such, I conceive, is a fair exposition of that outbreak of charlatanism—half knavery, half fanaticism—which has invaded our cities, and particularly our large cities, within the last few years. Before leaving New York for Albany, to attend the meeting of the State Medical Society this year, I was requested by a number of medical gentlemen, for whose distinguished talents I have the highest respect, to deal with this latest abomination. How well shall have acquitted myself of the task is for your honorable body to decide. Certain it is that my motives are those of patriotism—a patriotism which, for that matter, concerns the profession as a body quite as much as individuals.

To avoid the possibility of an imputation of unfairness, let us proceed with calmness.

The first question that naturally suggests itself is this: What are the limits of the action of the mind upon the body? This question may be answered by experience somewhat as follows: We know, in the first place, that ordinary sensation may be temporarily evoked, diminished, exalted, or perverted.

In his remarkable little book on hypnotism, Mr. Braid gives the account of an experiment which admirably illustrates the influence of the intellect on sensation:

"Four gentlemen, some of whom occupied exalted positions in the scientific world, were requested to place their arms on a table with the palms of their hands turned upward. Silence having been enjoined, each was requested to look at the palms of his hands for a short time, his whole attentention being at the same time focalized upon this simple act. What happened is most interesting from a psycho-physiological standpoint. In the first place, five minutes had scarcely elapsed before one of the gentlemen complained of a sensation of intense cold in his hand; another soon afterward declared that he felt a pricking sensation in the palms of the hands, as though electric sparks were emitted from them; a third felt a disagreeable sensation of heat in his hand, while the fourth had become affected by cataleptic rigidity."

Insensibility to pain induced by psychical means is one of the remarkable facts of hypnotism. This subject has recently been revived and thoroughly discussed in the medical journals. The induction of the condition known as the hypnotic or mesmeric state

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is not, however, indispensable to procuring exemption from pain, for there are persons who, thanks to a mere association of ideas, coupled with a continuous powerful expectancy, are able both to rid themselves of pain and even to prevent its occurrence. Tuke relates that on one occasion he was about to have a tooth extracted under the influence of laughing-gas, when, in consequence of an unlooked-for *contretemps*, the dentist was unable to administer it. The extraction was, therefore, performed without it, but the operation was rendered almost painless by the writer's vividly imagining pleasant ideas, and mentally repeating to himself, How delightful! How delightful!

More common is the immunity from suffering enjoyed by persons while in a state of great excitement; while in this condition they may be wounded by bullets, sharp instruments, or even burned, without experiencing pain. Forty years ago Dr. Elliotson, and subsequently Dr. Erdaile, reported scores of cases in which surgical operations of the greatest gravity had been performed without pain by the aid of mesmerism. It was thought at that time, and the same idea has been lately repeated, that the true surgical anæsthetic had been found; but the simple fact that only a certain percentage of persons can be hypnotized utterly destroys such hopes as these. I shall have occasion to refer to this point later on when discussing the limitations of legitimate psycho-therapeutics.

The intellect may exert an habitual and an exceptional influence over the movements of voluntary muscles; the former effect is seen in the wonderful and almost continuous play of the facial muscles; the latter is exemplified by the action of the muscles, notably those of the hand and face, in persons whose thoughts are being divined by the "thought-reader," as the individual is called who is able to follow the mental action of another by the aid of the betrayal of thought afforded by subtle concomitant actions of the muscles.

Temporary loss of muscular power (paralysis) may also be induced through mental action. The suggestion culminating in the fixed belief that a muscle or group of muscles cannot be contracted or relaxed is enough in susceptible persons to induce a transient loss of power. Fixed expectancy engendered, for example, by the suggestion of an individual in whom the person operated upon stands in some fear or awe, or by circumstances which exert a like potent influence upon the imagination, may give rise to astonishing modi-

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fications of the special senses, as well as of the muscles and general sensibility.

Many of the hallucinations occurring in sane persons, or those who are usually, at least, not accounted insane, are to be referred to this circumstance.

Here is an instance in point related by Professor Bennett, of Edinburgh:

"A clergyman told me that some time ago suspicions were entertained in his parish of a woman who was supposed to have poisoned her newly born infant. The coffin was exhumed and the procurator, who attended with the medical men to examine the body, declared that he already perceived the odor of decomposition, which made him feel faint, and in consequence he withdrew. But on opening the coffin it was found to be empty, and it was afterward ascertained that no child had been born, and, consequently, no murder committed."

This is an excellent illustration of the powerful suggestive effect upon the mind of dramatic circumstances, and of the readiness with which such suggestions become translated into veritable hallucinations. It is only necessary to repeat that similar phenomena may be evolved by suggesting to a susceptible person the certainty, probability, or even possibility of their occurrence.

Here is a case, narrated by Dr. Gregory and quoted by Tuke, which illustratrates this point:

"In Kleische, a small village in Germany, a maid-servant was sent to buy some meat. She executed her order correctly, and as she was returning in the evening she thought she suddenly heard a great noise behind her, like the noise of many wagons. Upon turning around, she observed a little gray man, no bigger than a child, who commanded her to go along with him. Upon reaching the outer court of her master's residence, she was met by the coachman, who asked here where she had been, to which she returned a very distinct answer. He did not remark the little man, but she still continued to do so. As she was passing the bridge he summoned her for the last time, and, upon her refusing to answer him, he told her, with a menacing look, that she should be four days blind and dumb, and having said so disappeared. The girl hastened to her apartment and threw herself on the bed, unable to open her eyes or to pronounce a word. She appeared to understand all that was said, but could not make any answer to the questions which were proposed to her except by signs. Everything was tried for her recovery by the family with whom she lived, but all was in vain. She was incapable of swallowing the medicines which were ordered for her. At last, on the expiration of the fourth day, she arose in tolerably good health and narrated what had happened to her."

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The limits of the present paper will not admit of further enlargement on the question of the modification of the special senses by the intellect, or, if a more exact form of statement be desired, by cortical function. I will merely add, therefore, that during the hypnotic or mesmeric state the most astounding exaltation and depression of the special senses may be induced by suggestion. These facts have long been known to the profession, and I have repeatedly had the opportunity of making interesting demonstrations on persons susceptible of being hypnotized.

It has, also, long been known that the involuntary muscles may be influenced by the intellect; the heart's action may be rendered irregular by concentrating the thoughts upon it; the bloodvessels may be made to expand or contract, as seen in blushing or the pallor from fear; nausea, vomiting, and even peristaltic action of the intestines, may be induced by imaginary causes. I know a lady who suffered from nausea at the mere sight of a dead cat. A large number of cases are also on record where vomiting has been caused in persons who had taken inert substances which they falsely imagined to be endowed with emetic properties; and even evacuations of the bowels have been induced over and over again by leading the subject to believe that he had taken a purgative, while in reality a bread pill or some other inert substance had been administered.

The secretory functions and general nutrition are much influenced by mental phenomena; hence, a mass of evidence is forthcoming which shows conclusively that the salivary glands, the kidneys, the skin, and probably even the intestinal glands, may be functionally affected through the imagination, precisely as we have seen in the case of the stomach. As regards the influence of the mind upon general nutrition, the facts are so notorious as hardly to require mention. Pleasant emotions, when not accompanied by excesses, promote nutrition, while disagreeable feelings, such as anxiety and protracted worry, often cause a rapid loss in weight, besides imparting the emaciated, haunted appearance to the physiognomy which bears such unmistakable evidence of the conflict within.

Such, then, are the more tangible effects of the psychical mechanism upon the physical economy; or, if a more technical statement be demanded, such are the effects of certain cortical states upon the remainder of the economy.

An analysis of these effects reveals, in the first place, the impor-

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tant fact that they are largely *evanescent* in character and liable to disappear with the cessation of the emotion or conception to which they owe their origin. The second important fact to be borne in mind is that the effects are *functional* in character and represent modifications in degree rather than in kind. These two facts taken together—to wit, the evanescence of mental effects upon the body *plus* their purely functional character—would of themselves lead us to the inference that changes in the tissues involving such immense perversions of histological processes as those seen in cancer and other neoplasms could not be alone attributed to mental influence. And in this inference we should without doubt be borne out by facts.

But if we cannot produce tumors and other profound changes in healthy persons by acting upon their intellectual mechanism, how can it be supposed that we can remove such gigantic histological perversions when they have once become established, simply by acting upon the patient's mind through the medium of suggestion and the expectant attention thereby engendered? The supposition is simply preposterous. But there are reasons other than a mere *reductio ad absurdum* why we must place the stamp of infamy and fraud upon the pretensions of the mind-healer *et hoc genus omne.* The most cogent of these reasons is the fact that not only during bygone centuries but throughout modern times up to the present day scientific physicians throughout the world have striven to act upon the minds of their patients suffering from incurable maladies, if for no other reason than to conceal the advent of death from the sufferer, with a view to postponing the agony of the spirit incident to protracted waiting for the inevitable end. While encouraging the patient by suggestion and arousing in him that hopefulness which is called expectant attention in the psychological jargon of our day, the ancient doctor, all unbeknown to himself, perhaps, did more than mind-healer or other charlatan ever could, save that his actions were characterized by that scientific honesty which is the mark of the true physician. He made no false pretences of imaginary cures. He informed friends and kindred of the inevitably fatal termination, and sought to postpone the end by every resource of surgery and medicine, meanwhile smoothing the pillow of the dying by fostering hope to the last.

Here we have a gigantic fund of experimental data ready at hand with which to disprove the fraudulent assertions of mind-healers

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that they are able to cure organic disease by the aid of mental influence alone. Disregarding all theoretic proof of the absurdity of their doctrines, we may content ourselves by simply stating that appeals have been made to the minds of those suffering from organic affections of all kinds for centuries without avail. It is true, as we have said, that such appeals were not those of the charlatan. The patient was not left to die without dietetic, medical, or surgical support like the unhappy victims of the modern mind-healer; but for this very reason the negative results are all the more decisive.

The mind-healer or faith-healer, then, is not an exponent of progress, but he is rather the disciple of decadence. He ignores the experience of the ages, and appeals to fallacies which have been disproved millions of times by actual trial. He is the anarchist of science; to him what is is of no account whatever. Logic and scientific evidence he despises; but when his unutterable ignorance is revealed, his specious fallacies and paltry scientific usurpations laid bare, he appeals to religious doctrine, which he distorts and perverts to suit his own vile ends. His exploits in the last-named direction have been of such a character as to make all friends of true religion hide their faces. It is time that the Church should join hands with medicine in the eradication of this infamy; both are alike discredited by its continuance.

Let me once more repeat that, from the very beginning, the influence of the mind upon the body, and the applicability of the principle in the treatment of functional affections, and particularly in functional affections of nervous origin, have been perceived and recognized as a ligitimate and valuable adjunct to the manifold resources of the scientific physician; it is only against the quixotic exaggeration of the principle that his protest is recorded. Herein lies the difference which must ever exist between the perversions of the ignorant, brazen humbug and the enlightened application of all legitimate means to the cure of disease, which is the prerogative of the conscientious doctor.

Seeing, then, that the influence of the mind upon bodily function as a therapeutic adjunct in certain affections, notably those of hypochondriacal, hysterical, and neurasthenic character, has been thoroughly recognized by the profession, there is every reason why the prerogative of exercising and deciding when such mental treatment is indicated should remain, as it always has, with the profession.

Some of the more cogent of these reasons may be summarized as

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follows: In the first place, the number of cases in which an exclusive reliance upon the curative potency of mental effects can be placed is so exceedingly limited that without a thorough acquaintance with pathology, diagnosis, and therapeutics it is impossible to accomplish much for the patient. Secondly, the most positive harm is liable to occur by a misuse of the method. A case in point was recently reported in one of the New York evening papers by Dr. Allan McLane Hamilton. The case in question was that of a lady who had suffered for many years from a spinal disease which interfered with locomotion. She was induced to consult a mind-healer, who told her to throw away her crutches and walk. With excessive faith she did throw away the crutches, but, to the consternation of all, she at once fell to the floor, sustaining a fracture of the thigh which led to her death a few weeks afterward. Another great danger is found in the propensity of these charlatans to season their quixotic philosophy with an ample proportion of religious superstition. As a result of this, the imagination of the patient is so unduly wrought upon as to imperil his sanity. I have a case of this kind under my care at present, in which hallucinations of hearing, insomnia, and morbid depression of a severe type have been developed by treatment at the hands of one of these fanatics. It is evident, therefore, that the faith-cure, mind-cure, and similar forms of charlatanism represent not only exaggerated forms of humbug, but positive danger to the community.

In combating these flagrant abuses, the enlightened press of the country can render the greater assistance. Substantial proof of this is afforded by an editorial of great ability which recently appeared in the *New York Commercial Advertiser*. In concluding this excellent piece of writing, the editor pertinently observed:

> "In this State we have a statute regulating the practice of medicine and intended to forbid such practice by any person not duly qualified. By reason of a technicality, this prohibition does not seem to apply to faith-healers, mind-curers, and Christian scientists. It is high time that the statute should be so amended as to embrace these with other quacks."

I have quoted this editorial because it proves that an enlightened public opinion is with the profession on this question; and I may add that, from conversations which I have had with eminent clergymen, the profession may confidently reckon upon substantial support from that quarter. Shortly before leaving New York to attend the meeting of the State Society, I was informed by a medical gen-

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tlemen from Boston that the question of invoking the aid of the Legislature for the suppression of the dangerous excesses of the faith-healers had been agitated by members of the Massachusetts Medical Society. Whether the Legislature of the State of New York shall be petitioned for the same purpose remains for the profession to decide.

If I have rendered any service to my colleagues in the profession by a simple statement of the more prominent issues involved in this question, I shall feel quite satisfied.

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REPORTS OF COMMITTEES.

XXXVII. Report of the Committee on Hygiene.

PROPOSITIONS TO IMPROVE THE ORGANIZATION OF LOCAL BOARDS OF HEALTH AND TO PROMOTE THE SANITARY CONDITION OF PUBLIC INSTITUTIONS.

To the Medical Society of the State of New York:

Your Committee on Hygiene would respectfully report that the line of observation followed, in the year just completed, has been in regard to the success in the working of the present system of organization of the local boards of health in this State, and also as to their efficiency of administration.

Through the efficient efforts of the State Board of Health, over 1200 local boards have been established during the past eight years, and a consequent vast improvement in sanitary conditions has been the result. But, in the experience of the State Board, as well as in local organizations, constant failures to secure such a completeness of administration as is reasonably expected are experienced.

Your Committee has devoted considerable time and consideration to the recognition of the causes of such failures, to ascertain, if possible, means by which existing sources of embarrassment may be removed. Their idea has been, so to examine the organization of the local health board as to learn in what part of its structure possibility of imperfect administrative work may commence.

They would present the result of their observations in three statements:

First, as regards the *position* and duties of the *Health Officer*.

Second, as to the *composition of the Board*.

Third, as to the so-called *unit of territory* upon which the *organization* is based.

First. The position of health officer is necessarily filled by a man of medical training. It is the medical profession which must

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furnish the material for practical sanitation. Your Committee, however, recognize the fact that while physicians make the best sanitary *teachers*, they do not necessarily make the best *sanitary administrators*. Hence, the conclusion is reached, that a *practicing* physician does not make the most successful sanitary administrator. The lines of mental thought of the sanitarian and practicing physician are different, since the one is wholly occupied with the *prevention* of disease and the means for its accomplishment, while the other is equally occupied with the recognition of forms of disease and the means of *curing* them. The practicing physician cannot, as such, have the necessary mental habits which the purely sanitary administrator acquires, and which are vitally necessary for successful working of the organization.

The sanitarian is also free from the element of professional and personal embarrassment to which the practicing physician is subject to a great degree. The inadequate salary paid the health officer is another point noted, since the occupant of such position cannot devote the time necessary, on account of the insufficient compensation, to perform fully duties which would require his entire time.

And last, but not least, the embarrassment arising from political influences and control in sanitary matters, goes far to destroy effectiveness of sanitary administration.

The *second* cause of imperfect administration is found in the composition of the average health board. While the intent of the law organizing them is in the direction of appointment of fit persons, its effective working is not so clear. Political considerations and influences are the chief disturbing factors. Control by partisan combinations, and failure to secure capable commissioners of sanitary, legal, engineering and business qualifications, are the pregnant causes of inefficient administration. With an organization so constituted, even the ideal health officer must be thwarted in his best conceived efforts of administration—since the appointees of such a board, being selected on a *political* and not a *sanitary* basis, must fail to secure that perfection of detailed work so essential.

The *third* cause of failure noted lies in the so-called *territorial unit of organization*. Under the present law this is the village, town, or city. It has been a question of serious consideration with the members of your Committee whether this secures the greatest efficiency of administration. With the existing difficulties connected with the positions of health officer and composition of the

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board, the multiplication of small and loosely organized boards with small districts to cover, seems to complicate and render more complex the insuring of general efficient administration.

The work of our State Board is supervisory, not executive.

The present able Secretary of the State Board of Health, Dr. Balch, in his report for 1887, calls attention to some of these defects in the working of the local boards, and suggests the advisability of such changes in the powers of the State Board in emergencies as to relieve them in part by giving the State Board the power, in such conditions of ineffective organization, to effect a proper organization.

It has seemed to your Committee that a change in the unit of territory might secure better results; that by establishing the *county* as the unit, the number of health boards in the State would be greatly reduced; the relation of the State Board to the local boards would be greatly simplified and more direct, and hence, that greater efficiency and uniformity of sanitary administration could be secured. The economy of such a system is also apparent. The health officer could be insured a sufficient salary to devote his entire time to the work, and also, which is very important, could be a trained sanitarian, not a practicing physician, and be continued in office. The county seat would thus become the sanitary centre of the district.

Your Committee has aimed to present very briefly the results and conclusions of the observations of the past year. They believe this to be a very important subject for further consideration by this Society. In interviews with sanitarians in other States, whose general board is similarly organized with our own commonwealth for sanitary work, the growth of similar views is apparent.

It is the object of your Committee to present the subject to this Society without any suggestions as to the character of the changes or details of organization which they feel can be made. They do not think that it lies within their present province to do more than forcibly emphasize the existence of evils which may be remedied. They consider the subject of so much importance, as thus far developed, as to lead them to suggest that the Committee of Hygiene be instructed to make this a special line of observation during the coming year, and, at the next annual meeting, to report in a definite form upon existing embarrassments in the administration of the

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local health boards of the State, with suggestions for their remedy looking to future legislative action.

From the assistance of the State Board of Health in addition to the individual work of the Committee on Hygiene of this Society much can be accomplished.

They would invite special consideration of the question as to the change from the *village* to the *county* as the unit of territorial organization. This is not a new thought, but has been for a time under consideration, though not generally entertained and urged among the profession, but we believe, when fully comprehended, must recommend itself to those acquainted with sanitary organization and interested in securing its efficiency.

During the past year no extensive prevalence of epidemic disease has occurred within the State. Recently several outbreaks of *variola* have occurred, but prompt resort to general vaccination and isolation of the sick and exposed have proved sufficient to place the disease within bounds, and cause its gradual disappearance in affected localities, though there still exist in several parts of the State small groups of cases.

In the public institutions of the State sanitary conditions are in general fairly maintained. Your Committee would, however, specially invite the attention of this Society to the hygiene of the county insane asylums. A growing evil exists which demands immediate action looking to radical reform.

The retention of the acute insane in many of the county asylums, with the injurious conditions consequent of noise and filth, calls for some action on the part of this Society.

The report recently made to the State Board of Charities, by its standing Committee on the Insane, and by the State Board adopted and transmitted to the Legislature, is a record of facts which are confirmed and in substance verified by the experience and knowledge of general medical practitioners as well as of alienists and specialists in the treatment of the insane.

Your Committee is so fully impressed with the importance of the subject that they would offer the following resolution:

Resolved, "That the detention of acute and chronic insane in county asylums, as shown by the Report of the State Board of Charities, is an evil which should not be tolerated in any case, whether pauper, indigent, or private patient, and should be forthwith abated; that the recommendations of said report for the regulation and restriction of county care and for the radical reforms therein, should be acted on affirmatively and immediately."

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While the State Board of Charities may not be justified, by their political or legal relations, in either affirming or denying the expediency of exclusive State care of the insane, the Medical Society of the State of New York is emphatic in affirming the necessity for such exclusive State care.

Before closing this report your Committee feel that they must emphasize the importance of greater vigilance in the prevention of diphtheria and typhoid fever, and would refer again to the reports of this Committee on the subject at the meetings of this Society three and four years since.

E. V. STODDARD,
A. N. BELL,
WILLIAM H. BAILEY,
J. P. CREVELING,
WILLIAM C. BAILEY,
Committee.

XXXVIII. REPORT OF THE COMMITTEE ON THE CAUSES AND PREVENTION OF BLINDNESS.

Two years ago a committee was appointed by this Society to investigate the question of blindness due to contagious ophthalmia in this State and in the United States, and to recommend means for its prevention. The importance and extent of the subject were so great that at the meeting one year ago it was only possible to report progress, and ask that more time be given for the work. This was rendered necessary also by the fact that our lamented colleague, Dr. Agnew, was unable to render the valuable assistance upon which we had counted, and only recently has his place on the committee been satisfactorily filled. Even now it seems advisable to give a synopsis of the more important features of the subject instead of attempting to go into many details which are not only of interest to the ophthalmologist but also of importance from a sanitary point of view. The reasons for this investigation concerning the increase of blindness will become apparent if a statement is first made of the statistical facts. In presenting these it will be necessary to repeat to a certain extent the statements made in a paper by the chairman of this committee, which was published in the *Transactions of the American Ophthalmological Society* in 1887. As far as we are aware,

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however, these statistics have not been stated in a similar manner anywhere else. When we compare the report of the United States Census of 1870 with the report of 1880, we find the population of the United States in 1870 was 38,558,371, and the number of blind then was 20,320. Whereas, the population in 1880 was 50,155,783, and the number of blind was 48,929. *In other words, while the population of the entire country had increased* 30.09 *per cent., the number of blind had increased* 140.78 *per cent.*

It is worth while in passing to call attention to the distribution of the blind throughout the country, and in doing so to quote the figures in the paper already mentioned. If the United States be divided into three parts, according to latitude—the first, or southerly range of States, including those which lie below the 35th parallel; the second range between the 35th and 40th, and the third above that—we find there is a constant increase in the ratio as we pass from the North toward the South. Thus there are: In the northerly range of States, 7.9 blind in each 10,000; in the middle range of States, 9.42 blind in each 10,000; in the southern range of States, 10.81 blind in each 10,000. This is shown in diagram No. 3.

There is another classification of the States which is also of some interest. If they be divided according to longitude into three groups, each of which includes about fifteen degrees, we find the proportion of blindness decreases as we go from East to West. According to this division, the first group of States would lie between the Atlantic Ocean and the Mississippi River, extending to about the 15th degree of longitude west from Washington; the second would be from the Mississippi to the Rocky Mountains, or from the 15th to the 30th degree; while the third would include the strip from the Rocky Mountains to the Pacific Ocean, or from the 30th degree of longitude west. Here we find: In the easterly range of States, 10.34 blind to each 10,000; in the middle range of States, 7.90 blind to each 10,000; in the western range of States, 5.68 blind to each 10,000. This is shown in diagram No. 4.

So much for the statistics relating to the United States as to the number of blind, their increase throughout the country as a whole, and their distributions in different parts of it.

Let us next consider the statistics which are available relating to New York State alone. The population in New York State in 1870 was 4,382,759, and in 1880 was 5,082,871; being an increase of 15.9 per cent. Whereas the number of blind in New York

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State in 1870 was 2213, and in 1880 was 4981; being an increase of 125.07 per cent.

In a similar manner, if we compare the State Census of 1875 with the United States Census of 1880, we find the population in 1875 was 4,698,958, and in 1880 was 5,082,871; being an increase of 8.1 per cent. While the number of blind in 1870 was 2256, and in 1880 was 4981; being an increase of 111.03 per cent. *In other words, the official reports show that during the ten years preceding* 1880, *blindness in the State of New York increased* 8.2 *times as rapidly as did the population, and during the last five years of that decade it increased* 13.7 *times as rapidly.*

It may be interesting also to glance at the distribution of blind throughout the State of New York. The 10th United States Census gives, for the first time, the number of these unfortunates in the different counties of each State. These statistics are in process of publication, but as that portion of the report was not complete when this one was being prepared, application was made to the State Board of Charities, where there is deposited a copy of the official returns relating to the blind. The assistant secretary of the Board, Mr. James O. Fanning, has kindly furnished the committee with the number of blind in each county, having ascertained that by adding the lists of more than five thousand names on record. The different counties have been arranged in four groups. The first includes this which contain less than 0.005 per cent. The second, which contain from 0.005 to 0.01. The third, 0.01 to 5 per cent. The fourth, more than 0.0521 per cent.

In view of these rather startling assertions in regard to the increase of blindness, it is natural that we should question the correctness of the data which lead to any such conclusions—in other words, to suspect that the apparently rapid increase was due to the difference in the manner in which the statistics were collected in 1870 as compared with 1880. In the compendium of the Tenth Census it is stated by Mr. Wines, who has charge of that department, that the plan was essentially the same, but in order to satisfy ourselves more thoroughly a letter was addressed to the Secretary of the Interior, asking for any additional facts in regard to this point, but I was informed that the same outline was followed in one case as in the other; simply a special blank for the blind being filled out in 1880, like the one here presented, entitled Schedule 4. Of course, these examinations were by no means as accurate as would

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be desired from the ophthalmological point of view, for the numerators were often ignorant and careless men, but the fact remains that the errors were probably almost as great in 1870 as in 1880. Moreover, in order to verify the accuracy of some of the figures in the last census, I made application for the returns regarding the city of Buffalo, and while a number of changes of residence were made and it was difficult to verify the reports in detail, still, the information, obtained as far as it went, showed that at least that part of the report was quite as reliable as could be expected.

Let us consider, next, the causes which tend to make this apparent increase of blindness. In doing so, it is natural that we inquire, first of all, what were the causes which have produced that condition among those who are already blind. To determine this, it seemed advisable to undertake the examination of a considerable number of these unfortunates, and, of course, that could be done most conveniently in asylums, almshouses, where they were collected together; accordingly a list of questions was prepared, being mainly a copy of that which was used by Hugo Magnus,[1] a specimen of which is here appended.

Name of the Blind Asylum.
Location.
Date of the examination.
Name of the Examining Physician.

1. Name of the Blind Person.
   Residence.
   Name of Father or Guardian.
   Residence.
2. Sex.
3. Age.
4. Religion.
5. Nationality.
6. For Adults, occupation before blindness.
   " Children, " of the parents.
7. Color of the hair.
8. Color of the Iris, if possible.
9. Degree of blindness.
   A. Count fingers at 1–3 metre.
   B. Quantitative perception of light.
   C. Absolute Amaurosis.

[1] Die Jugend Blindheit, p. 6.

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10. Cause of the blindness of the right eye.
11. " " " " left "
12. Condition of the right eye.
13. " " left "
14. Age at which right was lost?
15. " " left " "
16. Can the blindness be referred to scrofula?
17. Can it be referred to syphilis?
18. Is the blindness the result of any disease of the general system?
19. Are there any other bodily infirmities?

For those who have had smallpox.
20. Was the blindness before vaccination?
21. Was the vaccination effectual?

22. Did the blindness occur when in a town, or when in the country?
23. Were the parents related to each other?
24. Did the parents have normal vision?
25. Were any of the relatives blind?
26. Were there any other circumstances which might be important in connection with the case.

To the president of each county medical society we then forwarded as many of these blanks as there were blind inmates of his county almshouse, and the request was made that the blanks be filled and returned to the Chairman of this Committee. The accompanying table gives the list of those from whom replies were received, together with the number of examinations made by each. From this, it will be seen that responses were returned in only 19 instances, although letters with blanks were sent to all. Unfortunately, also, the answers to some of the questions were so indefinite that it was necessary to omit the cases from the classification.

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County.	Examining Physician.	Address.	No.
Albany,	James F. Earley,	264 Clinton Ave., Albany,	5
Chemung,	N. S. Messenger,	Beesport,	3
Chenango,	D. M. Lee,	Oxford,	2
Columbia,	Azro Chase Hoquor,	Chatham,	5
Dutchess,	I. W. Pouche,	Poughkeepsie,	6
Erie,	H. Y. Grant,	Buffalo,	21
Fulton,	Frank Beebe,	Johnstontown,	3
Jefferson,	J. B. Law,	.....	5
Montgomery,	D. M. McMartin,	Amsterdam,	4
Niagara,	J. B. Cosford,	Lockport,	2
Onondaga,	Chas. E. Bozaton,	Onondaga Hill, N. Y.	14
Rensselaer,	C. B. Herrick,	127 Third Street, Troy,	12
Richmond.	Isaac L. Millspaugh,	Richmond,	1
Schenectady,	John A. Heatly,	Schenectady,	1
Suffolk,	C. A. Baker,	Yaphauk,	1
Sullivan,	W. G. Steele,	Mongaup Valley,	1
Ulster,	Silas Soyton,	Neu Platz,	1
Washington,	John C. Gill,	Argyle,	3
Westchester,	Frank D. Revere,	Sing Sing,	4

A second set of examinations which the Committee have to acknowledge was made by Dr. W. H. Bates, of New York, acting under the supervision of Dr. H. D. Noyes. This list includes 168 cases seen at the New York State Institution for the Blind in New York. The third list contains the results of an examination of 128 inmnates of the New York State Institution for the Blind at Batavia. These examinations were made by the Chairman, assisted by Dr. Elmer Starr, of Buffalo. The results, as ascertained by these investigations as to the causes of blindness already existing here, is shown in the accompanying diagram No. 5.

In spite of this plan of inquiry, it is difficult to determine exactly some of the causes of the blindness, even when the greatest care was exercised, but it was evident from even the most casual examination that a very large percentage of the cases were due to some form of contagious disease of the eye. In the accompanying diagrams the causes are shown by the percentage of diseases producing blindness.[1] Those which are due to contagious diseases are represented in black. It will be noticed that one very large column is in both the black and red, showing that it was impossible to say definitely, even after the closest questioning, whether all those cases were due to contagion, but the evidence tended to show that such was the case in such a large proportion that, only for the sake

[1] The Committee on Publication regret that it has not been possible to reproduce the elaborate diagrams which were exhibited in connection with this report.

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of perfect fairness, is admixture of the other cases shown in this column. The remaining causes are shown in colors, which, for another purpose than the one considered in the present paper, are divided into red and green. It must be admitted that in the case of blind asylums this representation, however truthful in itself, has a tendency to exaggerate the importance of the contagious disease of the eye as a cause of blindness. We do not find at such an institution those who have become blind by accident to adult life, or by those diseases which are more common in old age. In order to answer this question, I reproduce a similar table of percentages which is given by Magnus in his admirable work on blindness. In this table he brought together the results of examinations by different investigators which covered a total of 2528 cases of blindness. In copying this table, we have again represented in black those diseases which are distinctly of a contagious kind, and it will be seen at a glance how very great is the influence of these as compared with any other—over 20 per cent. of those of all ages being due to contagion. Finally, lest there should be the least possible doubt still left as to the importance of this factor in the production of blindness, I produce still another statistical diagram, No. 5, which was constructed from statistics published in the annual report of the Manhattan Eye and Ear Infirmary for the year 1886. In this is given a summary of 48,509 cases, of which it was shown that 26 per cent. were due to conjunctival diseases, and 25.5 per cent. to corneal diseases. This is represented in both black and red, for the reason that a certain number included in these two percentages could not rightly be called contagious diseases, but one of those who made this report, when speaking of them, mentions "over 50 per cent. as being communicable, or closely related to communicable diseases." In summing up, therefore, this portion of the question as to what are the causes which have produced blindness, it is fair, I think, to reply that contagion exercises by far the most important influence.

There is another aspect of this part of the subject which it is necessary to mention; I have reference to the influence which immigration has upon the increase and spread of contagious diseases of the eye, directly and indirectly. A considerable number of facts might be presented to illustrate this phase of the subject. I need only select as an example the influence exerted by one class of immigrants in relation to spreading one disease of the eye. It is gen-

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erally conceded that trachoma is essentially contagious, and also is of frequent occurrence among the lower class of the Irish population. Now the report of the Treasury Department for 1886 shows that from 1871 to 1880 there were nearly half a million of Irish immigrants in this country, more exactly, 444,589, and during these years the Irish formed 15.1 per cent. of all the immigrants who arrived in the United States. It should be borne in mind that by far the greater part of these immigrants—at least four-fifths of them, land at Castle Garden. In order, therefore, to ascertain what care was exercised in isolating any such contagious cases which might enter there, a letter was addressed to the physician in charge of the State Emigrant Refuge and Hospital at Ward's Island, New York, inquiring as to this point and his replies, although frankly given, were by no means such as to impress one with the care which the authorities exercise as to the disposition of such cases.

Few persons appreciate how great is the cost to the community of maintenance of a number of persons in their midst who are not only non-producers but who must also be fed and clothed. It is possible to make an estimate of the annual cost to the State for the maintenance of the blind. Supposing they were all provided for in an economical manner, such as can be done in large institutions, it is fair to estimate the cost of keeping each one at $2 per week, or $104 per year; to which should be added for clothing, $28 per year—or a total cost of $132. These are the figures given in the report of the Perkins Institution, a Massachusetts asylum for the blind, in October, 1874. It must be remembered, however, that these individuals are not producers; they do not earn what they otherwise would, and this amount must be added to the cost. Taking the lowest estimate of a man's wages at $1.20 for each working day, supposing that not one among them all could become a skilled artisan, and counting the wages of the women at only 40 cents a working day, we find there is a total yearly loss to the community, cost and wages for each man, of $404, and for each woman of $256. This at the very minimum estimate amounted, in New York in 1880, to $1,682,136, and over $25,000,000 in 1888 for the entire United States.

If these statements are of as much importance as they would appear, it behooves us at least to inquire what steps can be taken for lessening the increase of blindness. In a paper like this it is possible only to refer briefly to points which are of primary impor-

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tance without attempting detail in any respect. At present, however, if we were to suggest a plan it would be about as follows:

First. To popularize with the profession and laity the necessity of some care as to the proper cleansing of the eyes of infants immediately after birth; to impress the importance of this matter upon nurses, hospital attendants, and others, and, if possible, to teach them to apply to every infant's eyes a suitable solution of nitrate of silver, which need never be stronger than two per cent. and of maximum quality.

Second. Enactments should be encouraged similar to that recently passed by the New York State Legislature in regard to the proper isolation and quarantining of children with suspicious diseases of the eyes in all residential schools and in large institutions in which children are brought together. Moreover, similar rules, with proper modifications, should be adopted in prisons, reformatories, and other institutions for adults; especially does this hold good concerning soldiers in barracks and sailors on shipboard.

Third. By educating the public. The laity should be cautioned as to the contagious character not only of the so-called granular lids but especially of those severe forms of inflammation of the eye which result from inoculating it with gonorrhœal matter. This might be accomplished by posting notices in proper places, officially signed by the Board of Health or other proper officers; other proper notices posted in stone quarries, machine-shops, etc., would tend to lessen the proportion of accidents to eyes, so frequent in these places.

Fourth. That steps be taken to prevent the introduction into this country, by immigration, of cases of contagious diseases of the eye.

Fifth. That renewed efforts be made by the profession to collect data relating to bacteria affecting the eye—especially to the action of the gonococcus, the so-called trachoma coccus of Michel, and other forms of either the normal or diseased conjunctiva.

In submitting this report the Committee is impressed with the fact that any such presentation of statistics and recommendations is entirely inadequate to give a proper idea of the importance of the subject. In order to condense the statement as much as possible, it has been necessary to omit certain phases of the question entirely. The distribution of blindness in different portions of the State, the relation of certain causes which produces it, to altitude, to density of population and other factors, have been entirely omitted for the sake of brevity. The bacteriological questions which it involves

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have been hardly referred to, although considerable data have been accumulated relating to the causes of the disease here; by a personal examination of the same causes as they exist in Egypt, in Finland, and in other countries where blindness is of frequent occurrence. It is hoped, however, that these few facts, though imperfectly presented, may arouse some slight interest in the subject, and in doing so, tend to lessen the number of those most unfortunate and most pitiable of human beings—the blind.

LUCIEN HOWE,
E. V. STODDARD,
HENRY D. NOYES,
Committee.

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IN MEMORIAM.

HARVEY JEWETT, President, 1882.
Died at Canandaigua, Sept. 4, 1888.

A. MANDEVILLE, Permanent Member.
Died at Rochester, Aug. 31, 1888.

FRANK G. BUCKBEE, Permanent Member.
Died at Fonda, Oct. 22, 1888.

EDWIN M. SNOW, Honorary Member.
Died at Providence, R. I., Dec. 22, 1888.

H. R. WINTER, Permanent Member.
Died at Phœnicia, 1888.

CLARK A. NICHOLSON, Permanent Member.
Died at Beekman, 1888.

H. H. LANGWORTHY, Retired Permanent Member.
Died at Rochester, Feb. 5, 1889.

JOHN C. DALTON, Permanent Member.
Died at New York, Feb. 12, 1889.

DUANE B. SIMMONS, Honorary Member.
Died at Tokio, Japan, Feb. 19, 1889.

THOMAS HELME, Permanent Member.
Died at McKownsville, March 17, 1889.

JOSIAH HASBROUCK, Permanent Member.
Died at Port Ewen, March 25, 1889.

JOHN SWINBURNE, Permanent Member.
Died at Albany, March 28, 1889.

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OBITUARIES.

I. Memoir of Frederick Hyde, M.D.,

CORTLAND, N. Y.

By WILLIAM C. WEY, M.D.,

ELMIRA, N. Y.

Born January 27, 1807; died October 15, 1887.

The ancestors of Dr. Frederick Hyde immigrated from England and settled in Norwich, Conn., in 1660. Dr. Hyde's grandfather, Caleb Hyde, removed from Norwich to Lenox, Mass. His name, with that of his brother, Moses, appears as one of the "Sons of Liberty" of Berkshire County, 1774, in a stirring petition against British aggression. The "contingent" from Berkshire County was foremost in preparing for the conflict and took part in the fight at Lexington. Caleb Hyde served as an officer during the Revolutionary War. His brother, Elijah, was in the cavalry service in that contest, and became a confidential friend of Governor Trumbull, of Connecticut. Another brother, Eliphalet, participated in the struggle for independence; and still another, Ebenezer, was captured while carrying arms against the Royalists and died a prisoner on board the infamous Jersey prison-ship. A brother-in-law of Caleb Hyde, General Patterson, distinguished himself in the field of warfare and exhibited the uncompromising traits of character, combined with unflinching courage, which marked the conduct of the so-called "rebels" of that period.

On the maternal side, Dr. Hyde traced relationship with Deacon Osborne, of New Haven, Conn., whose influence for good in community, and through his descendants, was positive and pronounced.

Caleb Hyde, accompanied by his wife and several sons, removed from Lenox, Mass., and located in Lisle, Broome County, New York, in 1790, or thereabouts. Doubtless the friends whom they left in the old Massachusetts home regarded them as withdrawn from their sight forever, to battle for existence in the wilds of central

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New York. Society had been stirred by the event of the preceding years of war to unusual activities, and manifested those illustrations of sturdy and self-sacrificing devotion to duty in all the requirements of life on the frontier, which gave the men of that day preëminence for integrity, perseverance, and the highest type of honesty. In his new home Caleb Hyde was soon appointed Major-General of the Militia, and later he was elected to the State Senate, as a member from the Western District of New York.

Colonel Ebbey Hyde, the father of the subject of this sketch, was the thirteenth child of his parents. In keeping with the accommodating habits of the times, Colonel Hyde easily adapted himself to the successive vocations of farmer, tavern-keeper, and village merchant. While acting in the capacity of store-keeper for a wide region around Whitney's Point, in the county of Broome, his son, Frederick Hyde, was born, on the 27th day of January, 1807. The country now occupied by Broome County and the counties adjacent contained vast tracts of forest, watered by streams which abounded with fish and shad in great numbers were taken from the Susquehanna River. Indians lingered in a region so prolific of food, and during the fall of every year, for a long time after the birth of Dr. Hyde, they were drawn in considerable force to hunt and fish in a country especially favorable for such pursuits.

Dr. Hyde, as a child, enjoyed the limited opportunities afforded in a sparsely settled community for purposes of education. He no doubt made the best possible use of the privileges within his reach to acquire the groundwork of a liberal education. Before reaching his fifteenth year, opportunity offered, and he set out, on foot, in the deep snow of winter, to teach a district school, many miles from his home, which he conducted successfully through several seasons. From this engagement he became a recognized and popular teacher of schools, and, at the same time, found leisure to indulge in such necessary branches of education as qualified him, when sufficiently ripened in years, to commence the study of medicine with Dr. Hiram Moe, of Lansing, N. Y. His studies were continued and completed under the instruction of Dr. Horace Bronson, of Virgil, N. Y., who, in addition to prominence as a physician, possessed ripe scholarship and distinguished graces of Christian character. After one course of lectures at the College of Physicians and Surgeons of Western New York, at Fairfield, he took out a county license to practice, in 1833. Upon finishing two courses of lectures

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in the same institution, in 1836, he was granted a diploma, and immediately entered into co-partnership with Dr. Miles Goodyear, at Cortland, N. Y., whose daughter he married in 1838, and where he passed all the remaining years of his life. Dr. Goodyear was a graduate in the first medical class of Yale College, and practiced his profession in Cortland more than fifty years. He was a man of marked intellectual power, and possessed marvellous tact and energy as a practitioner. His influence throughout the bounds of his famous practice was direct and inspiriting, and among his colleagues in the profession he was held in the greatest reverence. It seemed fitting that the mantle of Dr. Goodyear should have fallen upon the shoulders of his associate, Dr. Hyde, who bore it with grace and dignity, and without intermission, until he reached the age of fourscore years.

Two children survive Dr. Hyde's marriage; Augusta, and Dr. Miles Goodyear Hyde, a graduate of Yale College, in the class of 1865, and of the Geneva Medical College, in 1868. For seventeen years Dr. Miles G. Hyde devoted his rare professional and literary gifts in the discharge of the duties incident to his connection, in practice, with his illustrious father. He has been honored by his associates in medicine with the presidency of the Medical Society of the County of Cortland on two occasions, has represented the Society as a delegate to the Medical Society of the State of New York and in the American Medical Association, and for a number of lecture seasons held the position of Adjunct Professor of Anatomy and Physiology in the medical department of the University of Syracuse. Impaired health compelled him to relinquish professional and educational pursuits, and devote his time and talents to less irksome and exacting employments.

From the beginning of his active life as a physician, which dates from the day he became vested with authority under the law to practice medicine, Dr. Frederick Hyde naturally identified himself with such pronounced measures as tended to sustain the honor and dignity of the profession. Fellowship in organizations among medical men served to impress his associates with something of his own zeal in the direction of elevating the standards of individual and professional worthiness to bear the responsibilities of the doctorate in medicine. It may be said of Dr. Hyde that he was radical in certain lines in which liberal thought assisted in determining his ideal of the possibilities to be attained in his beloved

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profession; and conservative, in the same breath, as it were, in directly influencing the current of sentiment into safe and consistent channels. He and others equally reliable as guides and teachers, saw and appreciated the drift of the times in respect to the demands of the profession when it should have thrown off its swaddling clothes in connection with better educational requirements from students, a higher grade of instruction in the medical schools, longer terms of study, and a more loyal spirit among physicians in practice.

Directly after commencing his work with Dr. Goodyear, Dr. Hyde became a stirring member of the Medical Society of the County of Cortland, and early appeared as a delegate from that organization in the State Medical Society. In 1844 he read a paper on "Fever" before that body.

In 1845, with Dr. Goodyear, he opened at Cortland a private school of anatomy and surgery, and carried on dissections and demonstrations before his pupils. He possessed qualities as a teacher which attached him to his students and kindled in them enthusiasm to acquire knowledge under his happy methods of communication. He conscientiously and painstakingly endeavored to impart instruction, first in anatomy to beginners, and later in regional anatomy to more advanced students. Those who were most intimately acquainted with Dr. Hyde and understood the promptings of his generous nature, will appreciate the meaning of conscientious and painstaking labor, on his part, for the benefit of pupils committed to his care. These words are the key to the character of Dr. Hyde, and indicate and express the extreme value which he put upon his methods of instruction, based upon the most careful preparation for the work laid out before him, without which he would not have ventured to assume the office of a teacher of medicine. The instruction of pupils, like his ordinary conversation, or the discussion of a subject at a meeting of physicians, or his more elaborate presentation of a paper, evinced a profound conviction, in his mind, of the importance of the matter under consideration, which made him always appear to be a serious man and very much in earnest in his words and manner, although he had a side, in his mental operations, which quickly and willingly responded to the operations of wit and humor. In other words, Dr. Hyde seemed to bear responsibilities so great and absorbing as to be placed beyond the more common influences and promptings of the

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lighter questions of every-day interest, or the charms of familiar social intercourse. This was true only in illustration of the fact that the inflexible demands of a practice which never permitted him to rest, and the exactions of his place as a medical teacher compelled him to be a thoughtful man. While he could afford no spare hours to bestow upon the conventionalities of society, he easily adapted himself to the circumstances which occasionally beset him and proved a most entertaining companion among congenial friends. It was not consonant with his tastes or temperament, however, to be attached to any society which was not allied to his profession, and in all the years of an unceasingly busy life, his first duty, his only duty, in fact, nearly to the day of his death, was to respond to the summons made upon him to engage in professional activities.

In 1853, Dr. Hyde was chosen Professor of Obstetrics and Diseases of Children, and Medical Jurisprudence, in the Geneva Medical College, and in the following year delivered a course of lectures in those departments.

In 1855, he was transferred to the chair of Surgery, a position more congenial with his inclinations and more in accordance with his line of study and professional practice. It should be mentioned in this connection that Dr. Hyde, as a general practitioner, had made himself familiar with all the branches of practical medical science as taught by the most approved authorities. He was equally competent to give instruction in surgery, obstetrics, and clinical medicine. His every-day life had advanced his knowledge in all the fields of medical literature, through the influence of a large and mixed practice, and he never permitted himself to fall behind the intelligence of the times through lack of acquaintance with the best books, old and new, and extensive reading of current journals. It is a matter of surprise that he should have found time in the engrossing occupations of professional life, over a wide range of country, not only to perform the drudgery required of a physician, but be able, also, to glean from writers the weight of opinion on subjects which were never out of his thoughts. If explanation is afforded in regard to his ability so constantly to work and study, it may be found in the fact that he had given all the powers of his mind and body to the practice of his profession. He never permitted himself to be distracted, or for a moment trammelled by the conflicting claims of other employments, or the abstractions of political ambition. He was eminently loyal to his profession from

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first to last. The demands upon his attention admitted only the claims of such as through sickness or accident called for the exercise of his wealth of skill and resources in administering to their relief.

Dr. Hyde acceptably filled the chair of Surgery in the Geneva Medical College until 1872, when the school was abandoned for the creation of the Medical Department of the University of Syracuse. He received the appointment of Dean of the new Faculty, and continued to discharge the duties of Professor of the Principles and Practice of Surgery to the time of his death, October 15, 1887.

The system of instruction in the medical colleges of the United States, until within a recent period, had been by courses of lectures in the several departments, delivered alike to first-year and to advanced students. No distinction was made between pupils just entering upon the study of the profession and those about to be invested with the degree of Doctor of Medicine. They sat together upon the same benches and accepted from their instructors the concrete dogmas of the schools, as if their needs, at the time, required to be satisfied with an equal degree of intellectual food. Elementary instruction was not imparted in medical colleges. The student was forced to be fitted to the system as he found it, which was so inflexible that it could not adapt itself to his positive needs, or even seek, in a measure, to conform to the methods of education practiced in the common schools throughout the State. The inequality of such a plan, its injustice to the pupil, and its paucity of results, in view of the requirements of a course of professional study, prompted the Faculty of the Syracuse school to take ground in favor of a graded system of instruction.

Dr. Hyde was thoroughly identified with this measure from its inception, and gave it all the impetus of his strong convictions, in conjunction with the efforts of his colleagues in the Faculty, and he had the satisfaction of seeing the medical department of the University of Syracuse stand forth, with the medical department of Harvard University, in the inauguration of a radical and vastly improved plan of instruction in medicine. The wisdom of the Syracuse school represented not the advanced, but the advancing and ripening thought on the subject of medical education throughout the United States.

Dr. Hyde deserves to be held in grateful remembrance because of his identification with this great reform in methods of study in

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medicine. His friends can afford to rest his reputation, if it had no other basis, upon the achievement which crowned his endeavors in securing for medical students primarily, and for the protection of the people as a consequence, a higher scale of education and a better type of practitioners.

Dr. Hyde became a member of the Medical Society of the County of Cortland in 1833, and maintained his interest and loyalty toward it as long as he lived, and was twice elected its president. He was connected with the American Medical Association from its organization, in 1849. Elected a permanent member of the State Medical Society in 1854, he served as its president in 1865, and delivered an address on the education of medical students, in which he took an advanced position in respect to the accountability of physicians toward their pupils, which, doubtless, led the way to the enunciation of still more progressive sentiments and the stand he took in the new school at Syracuse, as already mentioned.

Dr. Hyde was a very earnest member of an organization which became extinct many years ago, but which is remembered by some of its members in connection with the most interesting fellowship. I refer to the Medical Association of Southern-Central New York, which embraced the counties of Cortland, Chenango, Broome, Tompkins, Tioga, and Chemung, and which sustained an active existence, through the energy of Dr. Hyde, and men of like character, who always attended its perambulatory meetings and contributed papers of especial interest and value. The writer recalls the reports of Dr. Hyde for a series of years, on the surgery of Cortland County, which, as a young man, amazed him on account of the extended field of his observation, the boldness of his manipulations, and the success of his operations. The candor of Dr. Hyde's statements concerning his unsuccessful cases was in keeping with his conscientious desire to be just to himself, to his associates, his patrons, and, above all, to his profession.

Later, Dr. Hyde was in membership with the Medical Association of Central New York, a strong and influential organization, which put him in the chair of president and before which he delivered an address and frequently read papers.

Dr. Hyde found time to write on many subjects connected with his professional work, and his productions were published in the *Transactions* of the State Medical Society and in several of the journals. Among his papers may be mentioned the following:

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Fractures of the Cranium; Hernia, and its Complications; Malignant Tumors of the Abdomen; The Taxis in Strangulated Hernia; Traumatic Arterial Hemorrhage; Some Morbid Conditions of the Prostate Gland; Embolism and Thrombosis; Erysipelas; Treatment of Wounds, with and without Antiseptics; Some Notes of 267 Cases of Dislocated Hip, occurring in the State of New York; and, Opening the Sac in Herniotomy.

Almost his last literary work consisted in correcting for the press a paper on "Medullary Tumors," which appeared in the issue of the *Philadelphia Medical Times* of Dec. 11, 1887. Just before this he forwarded to the November meeting of the State Medical Association, in New York City, an article on "Wounds of the Ankle-Joint," which he had expected to present in person, but he was admonished by signs of feebleness of health that it would not be prudent to venture so far away from home. Distressed to realize that he could not fulfil the engagement to read his paper in New York, he resolved, if compelled by physical necessity, to spend much time in his house, to put in permanent form during the succeeding year the results of the labor of his wonderfully active life in the profession, under the modest title of "Surgical Notes."

The International Medical Congress in Philadelphia, in 1876, which he attended, furnished him an opportunity to be presented to many professional celebrities from abroad, who came as representatives to that body; and as a delegate to the British Medical Association in 1884, he took pleasure in renewing acquaintance with English practitioners. Instead of going to Copenhagen, as a delegate to the International Medical Congress in that capital, after the meeting of the British Medical Association, he preferred to visit the hospitals and other places of interest in Great Britain and Paris, which must have kept him in a state of continuous enjoyment. The ardor of his temperament as a surgeon found exercise and exhilaration in the great hospitals and museums of London and Paris, and in the names of famous men, which had been familiar to him, in the history of the profession, from the time he began to study in the solitudes of western New York.

In Washington, in August, 1887, at the session of the next International Medical Congress, Dr. Hyde met several of the physicians who had shown him attention abroad. As this meeting he was selected as one of the vice-presidents of the section on Military and Naval Surgery, and read a paper on the "Treatment of Gun-

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shot Wounds in Joints." He was appointed to a like position in the tenth meeting of the Congress, to be held in Berlin in 1890.

His zeal and enthusiasm appeared to outrun and conceal the fact of his age, and it is not probable that he realized that he had become an old man; certainly his friends saw no evidence that his eye had grown dim or his natural force had abated, as he moved among them, apparently, with all of his former energy, interest, and willingness in the work of the profession.

In the early days of October, 1887, with insufficient assistance and inadequate household facilities, Dr. Hyde performed a difficult surgical operation, after a railway accident, and as a matter of prudence toward his patient remained with him several hours, without food and exposed to cold. Returning to his home, greatly wearied, he was immediately called to attend a friend and neighbor who had sustained a painful injury, to whom he gave attention with as much alacrity as if fresh from a night of sleep.

As the evening advanced on the 10th of October, a severe illness, whose threatening had been occasionally perceived and heeded, attacked him with overwhelming violence, and five days later he sank into the sleep of death, with mental powers unimpaired and bright and confident with Christian hope.

His funeral occurred on the 18th of October. The attendance of sympathizing friends was exceedingly large. Old and young, men, women, and children, crowded the spacious house, which for so many years had been the scene of his dearest associations, and overflowed the ample grounds to the street during the simple and touching exercises of his burial. The organizations with which Dr. Hyde had been connected were largely represented: the State Normal school, at Cortland, of whose board of trustees he was the president; the Cortland Savings Bank; the Franklin Hatch Library Association; the New York State Asylum for Idiots; the Medical Society of the County of Cortland, and the session of the Presbyterian Church, of which he was a member, furnished numbers of sorrowing friends to swell the mournful company, which was further increased by the presence of a large number of physicians from all the near, and many from more remote counties in central and western New York.

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II. Biographical Sketch of Harvey Jewett, M.D.,

CANANDAIGUA, N. Y.

By WILLIAM C. WEY, M.D.,
ELMIRA, N. Y.

Born November 19, 1809; died September 4, 1888.

The parents of the subject of this sketch removed from Coventry, Conn., in 1801, to Langdon, New Hampshire, where he was born November 19, 1809. His father, Eleazer Jewett, and his mother, Submit Porter, were natives of Connecticut. Dr. Jewett was educated in the public schools of New Hampshire until he was fifteen years old, when, upon the death of his mother, he took up his residence in the family of his eldest brother, Dr. Lester Jewett, in Seneca, Ontario County, New York. After further study under the supervision of his brother, he entered Hobart College, at Geneva, New York, riding on horseback from Seneca to that institution, a distance of about ten miles, and returning each day. He remained in college a year and a half, when he assumed the duties of a school-teacher in Ontario County, and at the same time prosecuted the study of medicine with his brother. He attended lectures at the College of Physicians and Surgeons, Fairfield, Herkimer County, New York, in 1831 and 1832, and received a diploma from that school in the latter year. The late Professor James P. White, of Buffalo, Professor Frank H. Hamilton, of New York, and Professor Brainerd, of Chicago, were his classmates at Fairfield, and his subsequent professional and social relations with these distinguished men were of the most cordial and affectionate character. It was ever a source of pride and satisfaction to Dr. Jewett, that his college associates, mentioned above, had risen to such eminence in the profession.

Dr. Jewett began the practice of his calling immediately upon graduating, at Allen's Hill, Ontario County. He subsequently received the honorary degree of Doctor of Medicine from the Buffalo Medical College in 1851, and was appointed a curator of that institution, which position he held to the time of his death.

In 1835 he was married to Mary M. Dixson, daughter of John Dixson, of Richmond, Ontario County, who died September 30,

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1878. The children born of this marriage were Mary M., who died in 1864, at the age of twelve years, of typhoid fever, and Alice A. and John H., who survive. The latter, thirty-four years old, was educated at Amherst College, where he graduated in 1876, and at the College of Physicians and Surgeons, New York, in the class of 1879.

After an extensive and laborious country practice at Allen's Hill for twenty years, Dr. Jewett took up his residence in Canandaigua in 1852, where he passed the remaining years of his life.

The experience which he brought to Canandaigua gave him ready recognition among the citizens of that beautiful village and hearty support from his professional colleagues. It is safe to state that the responsibilities of his new position, while less exacting in respect to the demands upon his physical nature, made greater draughts upon his intellectual powers and kept him in a state of unremitting activity during the additional period which lengthened his life to nearly four score years.

Dr. Jewett was for many years consulting physician at Brigham Hall, a private asylum for the insane at Canandaigua, and for several months following the tragical and untimely death of its superintendent, Dr. George Cook, by the hand of a patient, he had sole charge of that establishment. He was also at the time of his death, and for a series of years previously, one of the trustees of the Canandaigua Academy and of the Ontario Orphan Asylum. He served for a long time as physician to the latter institution, to be succeeded upon his resignation of that office, by his son, in the same capacity. He contributed to the organization of the Wood Library Association, in Canandaigua, and was chosen its second president. He was elected to the Presidency of the Medical Association of Western New York in 1875, and to the Medical Society of the State of New York in 1882.

The address of Dr. Jewett before the latter Society at its seventy-seventh annual meeting, in Albany, on the 7th of February, 1883, entitled "Some of the Perils to Life from Preventable Diseases," was a remarkably clear and concise exposition of a subject which had occupied his mind for an indeterminate period. The eminently practical truths which he presented, as a sanitarian, which had been enforced in his extended ministrations as a physician, found expression in this "anniversary address," which deserved to be printed and widely circulated in every portion of the State, town and coun-

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try alike, as a thoughtful presentation of certain principles in social economy, whereby life and health may be prolonged and preserved by means of the simplest attention to the common rules of life, in connection with the unvarying characteristics of well-known diseases. It is to be regretted that a paper so valuable in suggestion, so full of knowledge, so graceful in diction, and so helpful as a guide in the everyday affairs of ordinary life, could not have been made more available for good by wide distribution, instead of finding a restful place in the *Transactions* of the State Medical Society.

In 1853, in the *Buffalo Medical Journal*, Dr. Jewett published an article on "The Influence of Tobacco in producing Sciatica."

In the same year and in the same journal he recorded the second reported case of the cure of ununited fracture by subcutaneous perforation and drilling of the bone, after the method of Dr. Brainerd, of Chicago.

The *Transactions* of the Medical Society of the State of New York, for 1869, contained a paper by him on "Apocynum Cannabinum in Dropsical Affections," which illustrated the accuracy of the writer in studying a given subject, the correctness of his observations in respect to the operations of the remedy in a large number of cases, and his individual judgment in the application of the drug to instances of disease which gave promise of relief under his familiar employment of its known qualities. The success of the author with the remedy under consideration, which some, at least, of his colleagues were not able to obtain, depended first, upon the care he exercised in gathering and preserving the plant, and next, upon the selection of cases suitable for the specific effects of the diuretic properties which are found to be contained in it, and which are only developed, as already stated, by knowledge of the capabilities of the medicine and its adaptation to peculiar pathological conditions.

In the hands of Dr. Jewett the remedy accomplished decided diuretic results. Independently of critical powers of observation, the doctor possessed another quality which gave him added strength and confidence in the treatment, particularly, of chronic forms of disease; a cheerful and imperturbable patience, which inspired confidence in the sick and permitted him to accomplish, in his own way, the ends of treatment, frequently in an unexpected manner. It is quite likely that his successful experience with *apocynum cannabinum* is, in a great measure, to be attributed to the persistent use of the article under circumstances which would have disheart-

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ened a practitioner less confident in its virtues and less persevering in the accomplishment of his purpose with the remedy.

Dr. Jewett had a large and varied acquaintance with general surgery, and his operations were boldly performed and yielded more than the usual measure of success which attends that branch of practice. In his earlier experience, he devoted much attention to the operation for cataract, and if he had lived in a large city, with opportunities multiplying on his hands, it is probable that he would have drifted into an exclusive practice, in which his remarkable anatomical knowledge and manual dexterity would have advanced him to deserved prominence in that line.

In this connection, mention should be made of his accomplishments in anatomical learning. His training at the Fairfield Medical School must have furnished uncommon advantages in human dissection, under skilled instructors, which developed a talent for the study of anatomy which followed him throughout his medical career. His ordinary and even extraordinary surgical practice found him prepared, in respect to anatomical requirements, for the demands which were likely to be made upon him at the most unexpected moment. He possessed the power, by a process of introspection, to revive and make fresh in his mind the structural arrangements which it became necessary to attack, as occasion might require. This knowledge availed him to good advantage in the capacity of a witness in the courts, where, as the writer has known, an unsuspected demand made upon him by an attorney was met by a thorough demonstration in regional anatomy which he had not had occasion to review since the days of his studentship. This gift came to him so naturally that he did not regard it as an accomplishment, but as an ordinary adjunct in the practice of his profession. It depended not only upon the happy possession of remarkable powers of memory, but also upon another talent which the doctor enjoyed in an equal degree—that of arranging in his mind, for ready use, such information as might be available in the sudden and unlooked-for, as well as in the more common necessities of professional life. His resources in medicine were necessarily large, and they came to him at the right moment and in the most convenient manner. Under a quiet exterior which was very rarely ruffled, he possessed force and independence of character which never failed him at a critical time, when it became necessary

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to assume responsibility, or to proceed to great length in the conduct of a surgical, an obstetrical, or other desperate case.

Dr. Jewett's tastes and sensibilities were of a gentle and refined order. He loved the quiet walks of life, rather than the ways of strife and variance. His religious convictions, like his convictions on other subjects, were strong and abiding, and his daily deportment was an exemplification of the faith which he professed, which displayed good will to man in the loftiest as well as the lowliest illustration of that principle. He indulged comprehensive charity of opinion in his estimate of others, and while his vision included the shortcomings of the age in which he lived, he did not set himself up as a reformer, or seek, by condemnation, to correct the irregularities of thought and morals which so apparently existed, and which were evolved out of the license, begotten of a false estimate of liberty, in these latter days. If he had been a judge, he would have been merciful toward the erring, and yet no man entertained a higher ideal of individual and social purity, or illustrated in his own person a more blameless life.

Notwithstanding the great assistance rendered in practice by his son, Dr. Jewett was reluctant to relinquish the demands of his patrons upon his services, and it required the loving entreaty of his family to compel him to forego calls in consultation, at long distance from home, in the latter years of his life. His spirit continued fresh and active, in spite of the growing feebleness of his bodily powers, and his interest in the profession and in all matters of local concern, as well as in the affairs of State and country, remained unabated. The animation of his voice and language, when discoursing upon medical topics, and his recollection of early contemporaneous history, made him an interesting companion, and the charm of his society consisted, in part, in the ability which he appeared unconsciously to exercise, in drawing out the views of his associates in conversation.

The 4th of September, 1888, was spent by Dr. Jewett in active professional employment. Returning to his home late in the evening, after having visited a case of serious illness in a very aged man, he engaged in pleasant conversation with his son and daughter, as was his habit, and retired to rest. At a later hour the other members of the family withdrew to their rooms, and the silence of the night fell upon the dwelling. Early on the morning of the fifth, the doctor was found dead in his bed, in the composed position

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in which he had placed himself the evening before. In the privacy of his own chamber, mercifully spared the pain of separation from loving and devoted children, and the anguish of physical suffering in the process of dissolution, this good physician was released from the bondage of the flesh, and in the midst of peaceful sleep rested from his labors.

Three days later, on a beautiful afternoon in the early autumn, a great company of people assembled at the house of the deceased, on the occasion of his burial, to attest their appreciation of his character as a physician, a citizen, a Christian man, and a friend and neighbor, and to express sympathy with the son and daughter, in the loss of a loving and indulgent father, whose chief comfort in life consisted in the confidence and tender and hallowed companionship of his children.

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MEDICAL SOCIETY OF THE STATE OF NEW YORK.

OFFICERS OF THE SOCIETY FROM ITS ORGANIZATION TO THE PRESENT TIME.

Year.	*President.*	*Vice-President.*	*Secretary.*	*Treasurer.*
1807	Wm. McClelland,	Alexander Shelden,	John Stearns,	Moses Willard.
1808	Nicholas Romayne,	Alexander Shelden,	John Stearns,	James G. Graham.
1809	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudfit.
1810	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudfit.
1811	William Wilson,	Westel Willoughby,	Benj. R. Bevier,	Asa B. Sizer.
1812	John R. B. Rodgers,	Westel Willoughby,	John Stearns,	Asa B. Sizer.
1813	John R. B. Rodgers,	Joseph White,	John Stearns,	Jas. L. Van Kleeck.
1814	John R. B. Rodgers,	Joseph White,	Ely Burritt,	Jas. L. Van Kleeck.
1815	Joseph White,	Ely Burritt,	James Low,	Westel Willoughby.
1816	Joseph White,	Ely Burritt,	James Low,	John Stearns.
1817	John Stearns,	Henry Mitchell,	James Low,	Chas. D. Townsend.
1818	John Stearns,	Henry Mitchell,	Peter Wendell,	Chas. D. Townsend.
1819	John Stearns,	Westel Willoughby,	Chas. D. Townsend,	John Downs.
1820	John Stearns,	Westel Willoughby,	Chas. D. Townsend,	John Downs.
1821	Samuel L. Mitchell,	Peter C. Adams,	Chas. D. Townsend,	John Downs.
1822	Samuel L. Mitchell,	Thomas Fuller,	Chas. D. Townsend,	T. Romeyn Beck.
1823	Alex. Coventry,	John H. Steele,	Chas. D. Townsend,	Jonathan Eights.
1824	Alex. Coventry,	John H. Steele,	Chas. D. Townsend,	Jonathan Eights.
1825	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eights.
1826	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eights.
1827	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eights.
1828	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eights.
1829	T. Romeyn Beck,	Henry Mitchell,	Joel A. Wing,	Jonathan Eights.
1830	Jonathan Eights,	Henry Mitchell,	Joel A. Wing,	Platt Williams.
1831	Jonathan Eights,	Thomas Spencer,	Joel A. Wing,	Platt Williams.
1832	Thomas Spencer,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1833	Thomas Spencer,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1834	John H. Steele,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1835	John H. Steele,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1836	Jas. McNaughton,	Samuel White,	Joel A. Wing,	Platt Williams.
1837	Jas. McNaughton,	Samuel White,	Peter Van O'Linda,	Platt Williams.
1838	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1839	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1840	Sumner Ely,	John B. Beck,	Peter Van O'Linda,	Platt Williams.
1841	John B. Beck,	William Taylor,	Peter Van O'Linda,	Platt Williams.
1842	William Taylor,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1843	Samuel White,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1844	Joel A. Wing,	Harman Van Dusen,	Peter Van O'Linda,	Platt Williams.
1845	James Webster,	Robert G. Frary,	Peter Van Buren,	Peter Van O'Linda.

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Year.	*President.*	*Vice-President.*	*Secretary.*	*Treasurer.*
1846	John McCall,	Stephen Hasbrouck	Peter Van Buren,	Peter Van O'Linda.
1847	Thos.W. Blatchford,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1848	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1849	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1850	Alex. Thompson,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1851	Robert G. Frary,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1852	Alonzo Clark,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1853	Jenks S. Sprague,	Peter Van Buren,	James H. Armsby,	Peter Van O'Linda.
1854	Chas. R. Coventry,	Peter Van Buren,	Howard Townsend,	Peter Van O'Linda.
1855	Fr'k H. Hamilton,	Thomas Hun,	Howard Townsend,	Peter Van O'Linda.
1856	Alden March,	Chas. S. Goodrich,	Howard Townsend,	J.V.P.Quackenbush.
1857	Augustus Willard,	Thos. C. Brinsmade,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1858	T. C. Brinsmade,	Geo. W. Bradford,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1859	B. Fordyce Barker,	Daniel T. Jones,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1860	Daniel T. Jones,	Edward H. Parker,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1861	Edward H. Parker,	Andrew Van Dyck,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1862	Thomas Hun,	Daniel P. Bissell,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1863	Daniel P. Bissell,	Joel Foster,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1864	Frederick Hyde,	George J. Fisher,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1865	Henry W. Dean,	Jos. C. Hutchison,	Wm. H. Bailey,	J.V.P.Quackenbush.
1866	Jos. C. Hutchison,	Julien T. Williams,	Wm. H. Bailey,	J.V.P.Quackenbush.
1867	John P. Gray,	Lake I. Tefft,	Wm. H. Bailey,	J.V.P.Quackenbush.
1868	J.V.P.Quackenbush,	James P. White,	Wm. H. Bailey,	John V. Lansing.
1869	James P. White,	George Burr,	Wm. H. Bailey,	John V. Lansing.
1870	S. O. Vander Poel,	Gilson A. Dayton,	Wm. H. Bailey,	John V. Lansing.
1871	William C. Wey,	Andr'w F. Doolittle,	Wm. H. Bailey,	Charles H. Porter.
1872	Cornelius R. Agnew,	B. F. Sherman,	Wm. H. Bailey,	Charles H. Porter.
1873	Edward M. Moore,	Francis Burdick,	Wm. H. Bailey,	Charles H. Porter.
1874	George F. Fisher,	Harvey Jewett,	Wm. H. Bailey,	Charles H. Porter.
1875	Thos. F. Rochester,	Ellsworth Eliot,	Edward R. Hun,	Charles H. Porter.
1876	E. R. Squibb,	J. V. Kendall,	Edward R. Hun,	Charles H. Porter.
1877	J. Foster Jenkins,	A. L. Saunders,	W. Manlius Smith,	Charles H. Porter.
1878	D.B.St.John Roosa,	Judson C. Nelson,	W. Manlius Smith,	Charles H. Porter.
1879	Henry D. Didama,	Nath. C. Husted,	W. Manlius Smith,	Charles H. Porter.
1880	William H. Bailey,	Abraham Jacobi,	W. Manlius Smith,	Charles H Porter.
1881	Abraham Jacobi,	William Govan,	W. Manlius Smith,	Charles H. Porter.
1882	Harvey Jewett,	E. D. Ferguson,	W. Manlius Smith,	Charles H. Porter.
1883	Alex. Hutchins,	H. G. P. Spencer,	W. Manlius Smith,	Charles H. Porter.
1884	B. F. Sherman,	P. R. H. Sawyer,	W. Manlius Smith,	Charles H. Porter.
1885	A. Van Derveer,	Alfred C. Post,	W. Manlius Smith,	Charles H. Porter.
1886	William S. Ely,	Sol. Van Etten,	W. Manlius Smith,	Charles H. Porter.
1887	Alfred L. Loomis,	A. M. Phelps,	W. Manlius Smith,	Charles H. Porter.
1888	Samuel B. Ward,	A. Walter Suiter,	W. Manlius Smith,	Charles H. Porter.
1889	Daniel Lewis,	Alfred Mercer,	Frederic C. Curtis,	Charles H. Porter.

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OFFICERS, 1889.

PRESIDENT,
DANIEL LEWIS, New York.

VICE-PRESIDENT,
ALFRED MERCER, Syracuse, N. Y.

SECRETARY,
FREDERIC C. CURTIS, (17 Washington Ave.,) Albany, N. Y.

TREASURER,
CHARLES H. PORTER, (108 Lancaster Street,) Albany, N. Y.

MEMBERS.

I. Delegates from County Medical Societies, etc.

Figures in parentheses indicate when term expires.

Albany County (1891):
L. Boudrias, Cohoes,
C. M. Culver, Albany,
M. J. Lewi, "
B. U. Steenberg, "

Allegany County (1892):
Otis Allen, Cuba.

Broome County (1892):
F. W. Putnam, Binghamton.

Cattaraugus County (1891):
V. A. Ellsworth, East Otto,
S. Z. Fisher, Little Valley.

Cayuga County (1891):
B. A. Fordyce, Union Springs,
Amanda S. Hickey, Auburn.

Chautauqua County (1891):
Edward Ames, Sherman,
H. J. Dean, Brocton.

Chemung County (1891):
H. DeV. Pratt, Jr., Elmira.

Chenango County (1892):
D. A. Gleason, Oxford.

Clinton County (1892):
D. S. Kellogg, Plattsburgh.

Columbia County (1892):
C. E. Fritts, Hudson.

Cortland County (1892):
—— ——.

Delaware County (1892):
H. N. Buckley, Delhi.

Dutchess County (1891):
W. J. Conklin, Fishkill,
W. G. Stevenson, Poughkeepsie.

Erie County (1892):
F. W. Bartlett, Buffalo,
Floyd S. Crego, "
Eli H. Long, "
Roswell Park, "
A. E. Persons, "

Essex County (1891):
E. T. Strong, Elizabethtown.

Franklin County (1892):
G. H. Oliver, Dickinson Centre.

Fulton County (1891):
Darius S. Orton, Northampton.

Genesee County (1892):
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Greene County (1891):
Charles P. McCabe, Greenville.

Herkimer County (1892):
C. W. Hamlin, Middleville.

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Jefferson County (1891):
H. H. Deane, Watertown,
W. A. Vincent, Three Mile Bay.
Kings County (1892):
Fred. D. Bailey, Brooklyn,
H. L. Bartlett, Flatbush,
Charles N. Cox, Brooklyn,
C. E. De La Vergne, "
R. L. Dickinson, "
George A. Evans, "
George R. Fowler, "
Sydney Allan Fox, "
William Maddren, "
L. S. Pilcher, "
Frank E. West, "
B. F. Westbrook, "
Lewis County (1891):
C. E. Douglass, Constableville.
Livingston County (1890):
J. E. Crisfield, Dansville.
Madison County (1892):
Edgar L. Miller, Eaton.
Monroe County (1890):
Archibald Dann, Rochester,
E. H. Howard, "
M. L. Mallory, "
Montgomery County (1890):
Charles Stover, Amsterdam.
New York County (1890):
L. B. Bangs, New York,
S. S. Burt, "
A. N. Brockway, "
C. E. Bruce, "
J. L. Corning, "
H. E. Crampton, "
A. F. Currier, "
W. B. DeGarmo, "
O. B. Douglas, "
E. D. Fisher, "
G. M. Hammond, "
N. J. Hepburn, "
L. Emmett Holt, "
H. P. Loomis, "
W. M. McLaury, "
J. A. Moore, "
W. O. Moore, "
P. A. Morrow, "
H. T. Pierce, "
W. C. Phillips, New York.
C. C. Rice, "
F. W. Ring, "
S. O. Vander Poel, New York,
R. Van Santvoord, "
Niagara County (1891):
D. H. Murphy, McNall,
Clinton A. Sage, Pekin.
Oneida County (1891):
T. M. Flandrau, Rome,
J. H. Glass, Utica,
H. G. Jones, "
Onondaga County (1890):
H. L. Elsner, Syracuse,
J. L. Heffron "
David M. Totman, "
Ontario County (1891):
—— ——.
Orange County (1890):
John F. Howell, Newburgh,
Burke Pillsbury, Middletown.
Orleans County (1891):
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Oswego County (1890):
A. W. Green, Palermo,
E. Frank Marsh, Fulton.
Otsego County (1891):
O. W. Peck, Oneonta,
Nathan Smith, Richmondville.
Putnam County (1891):
G. W. Murdock, Cold Spring.
Queens County (1891):
C. G. J. Finn, Hempstead,
Peter Y. Frye, Oyster Bay.
Rensselaer County (1890):
M. Felter, Troy,
J. B. Harvie, Troy,
O. F. Kinloch, "
Richmond County (1891):
Mrs. May R. Owen, Brooklyn.
Rockland County (1891):
—— ——.
St. Lawrence County (1892):
S. E. Brown, Ogdensburgh,
S. W. Close, Gouverneur,
A. C. Drury, Canton.
Saratoga County (1891):
—— ——.

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Schenectady County (1891):
W. L. Pearson, Schenectady.
Schoharie County (1891):
Charles Dickinson, Seward.
Schuyler County (1890):
S. B. Allen, Burdette.
Steuben County (1891):
Wm. B. Brown, Bath,
H. C. May, Corning.
Suffolk County (1892):
Barton D. Skinner, Greenport.
Sullivan County (1891):
W. W. Appley, Cochecton.
Tioga County (1891):
J. M. Barrett, Owego.
Tompkins County (1891):
Eugene Baker, Ithaca.
Ulster County (1892):
E. D. Chipman, Saugerties,
H. Craft, Stone Ridge,
C. W. Crispell, Rondout.
Warren County (1891):
B. G. Streeter, Glens Falls.
Washington County (1892):
S. J. Banker, Fort Edward,
Henry Root, Whitehall.
Wayne County (1892):
J. N. Arnold, Clyde,
—— ——.
Westchester County (1892):
P. Collard, Sing Sing,
E. I. Harrington, Yonkers,
H. E. Schmidt, White Plains.
Wyoming County (1890):
Milan Baker, Buffalo.
Yates County (1890):
John M. Maloney, Eddytown.
New York Academy of Medicine (1892):
Simon Baruch, New York,
F. H. Bosworth, "
Henry C. Coe, "
J. Henry Fruitnight, N. York,
Francis P. Kinnicutt, "
Medical Faculty, New York City University (1892):
R. A. Witthaus, New York.
Bellevue Hospital Medical College (1892):
—— ——.
College of Physicians and Surgeons, New York (1890):
Francis Delafield, New York.
Long Island College Hospital (1890):
Jarvis S. Wight, Brooklyn.
Medical Department, Union University (1891):
Lewis Balch, Albany.
Medical Department, University of Buffalo (1891):
Charles Cary, Buffalo.
College of Medicine, Syracuse University (1891):
F. W. Marlow, Syracuse.
Medical Department, Niagara University (1890):
Frank H. Potter, Buffalo.
New York Post-Graduate Medical School (1890):
Robert Abbe, New York.
New York Polyclinic (1891):
—— ——.

II. Permanent Members.

For regulations with regard to permanent members, their election, initiation fees, annual dues, etc., see page 2 of *Transactions*. Permanent members who neglect to pay their dues for three years, are dropped from the following list till arrearages are paid. (By-Laws, Chapter VI., Section 5.)

In case of the death of any member of this Society, it shall be the duty of the county medical society within the bounds of which he last resided, to transmit to the Secretary of this Society, a suitable obituary notice for publication in the *Transactions*. (By-Laws, Chapter V., Section 10.)

Year of Election.			County.
1880	H. R. Ainsworth,	Addison,	Steuben
1887	C. S. Allen,	Greenbush,	Rensselaer

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Year of Election.			County.
1886	William B. Alley,	Nunda,	Livingston
1885	Eli Allison,	Wayne,	Steuben
1888	C. W. Arthur,	Lyon Mountain,	Clinton
1888	Moses T. Babcock,	Hammondsport,	Steuben
1888	Gorham Bacon,	New York,	New York
1889	William C. Bailey,	Albion,	Orleans
1864	William H. Bailey,	Albany,	Albany
1884	M. J. Baker,	Hornellsville,	Steuben
1889	L. Bolton Bangs,	New York,	New York
1884	Milford L. Bates,	Canaan Four Corners,	Columbia
1855	Fordyce Barker,	New York,	New York
1876	Eugene Beach,	Gloversville,	Fulton
1887	Herman Bendell,	Albany,	Albany
1889	George E. Benson,	Hudson,	Columbia
1885	John M. Bigelow,	Albany,	Albany
1862	John Boardman,	Buffalo,	Erie
1861	Reed B. Bontecou,	Troy,	Rensselaer
1888	C. W. Bourne,	Hamburgh,	Erie
1888	J. P. Boyd,	Albany,	Albany
1872	Nathan Bozeman,	New York,	New York
1874	Elisha H. Bridges,	Ogdensburgh,	St. Lawrence
1883	A. J. Browne,	Newport,	Herkimer
1888	E. F. Brush,	Mt. Vernon,	Westchester
1887	L. Duncan Bulkley,	New York,	New York
1884	John E. Burdick,	Johnstown,	Fulton
1876	J. H. Hobart Burge,	Brooklyn,	Kings
1889	Stephen Smith Burt,	New York,	New York
1875	M. H. Burton,	Troy,	Rensselaer
1888	R. H. Cameron,	Johnstown,	Fulton
1885	A. M. Campbell,	Mt. Vernon,	Westchester
1884	H. W. Carpenter,	Oneida,	Madison
1884	S. S. Cartwright,	Roxbury,	Delaware
1866	J. E. Casey,	Mohawk,	Herkimer
1881	Frederick A. Castle,	New York,	New York
1879	Walter B. Chase,	Brooklyn,	Kings
1889	E. D. Chipman,	Saugerties,	Ulster
1886	Charles H. Chubb,	Palenville,	Greene
1889	John H. Cipperly,	Troy,	Rensselaer
1888	D. H. Cook,	Albany,	Albany
1882	William S. Cooper,	Troy,	Rensselaer
1888	J. Leonard Corning,	New York,	New York
1870	William H. Craig,	Albany,	Albany
1881	W. W. Crandall,	Andover,	Allegany
1882	Joseph P. Creveling,	Auburn,	Cayuga
1889	Andrew F. Currier,	New York,	New York
1882	F. C. Curtis,	Albany,	Albany
1885	John G. Curtis,	New York,	New York

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Year of Election.			County.
1889	Thomas S. Dawes,	Saugerties,	Ulster
1889	Francis Delafield,	New York,	New York
1888	Charles A. Dewey,	Rochester,	Monroe
1878	H. G. DuBois,	Camden,	Oneida
1876	Joseph W. Eddy,	Oswego,	Oswego
1885	I. C. Edson,	Windsor,	Broome
1888	Livingston Ellwood,	Schenectady,	Schenectady
1881	Smith Ely,	Newburgh,	Orange
1875	William S. Ely,	Rochester,	Monroe
1871	Thomas Addis Emmet,	New York,	New York
1889	Jas. D. Featherstonhaugh,	Cohoes,	Albany
1882	Lucius E. Felton,	Potsdam,	St. Lawrence
1888	Henry Flood,	Elmira,	Chemung
1889	M. B. Folwell,	Buffalo,	Erie
1888	Willis E. Ford,	Utica,	Oneida
1886	Amos Fowler,	Albany,	Albany
1889	George R. Fowler,	Brooklyn,	Kings
1882	George H. Fox,	New York,	New York
1889	N. H. Freeland,	Tarrytown,	Westchester
1886	Robert M. Fuller,	New York,	New York
1880	P. R. Furbeck,	Gloversville,	Fulton
1886	William H. Gedney,	Milton,	Ulster
1885	John Gerin,	Auburn,	Cayuga
1887	Arpad G. Gerster,	New York,	New York
1884	V. P. Gibney,	New York,	New York
1886	Theron Z. Gibbs,	Fort Ann,	Washington
1889	J. H. Glass,	Utica,	Oneida
1883	I. N. Goff,	Cazenovia,	Madison
1858	William Govan,	Stony Point,	Rockland
1881	Henry Gray,	Greenwich,	Washington
1887	Tobias J. Green,	Mexico,	Oswego
1880	Frederick S. Greene,	Coxsackie,	Greene
1888	Alexander Hadden,	New York,	New York
1887	William Hailes,	Albany,	Albany
1889	H. T. Hanks,	New York,	New York
1880	C. R. Heaton,	Owego,	Tioga
1889	John L. Heffron,	Syracuse,	Onondaga
1873	William H. Helm,	Sing Sing	Westchester
1889	F. Whitehill Hinkel,	Buffalo,	Erie
1886	Benjamin L. Holt,	Penn Yan,	Yates
1885	George G. Hopkins,	Brooklyn,	Kings
1885	H. R. Hopkins,	Buffalo,	Erie
1886	Joseph W. Howe,	New York,	New York
1886	Lucien Howe,	Buffalo,	Erie
1854	Thomas Hun,	Albany,	Albany
1889	Alexander S. Hunter,	New York,	New York
1878	James C. Hutchison,	Troy,	Rensselaer

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Year of Election.			County.
1875	Abraham Jacobi,	New York,	New York
1886	Charles Jewett,	Brooklyn,	Kings
1883	Laurence Johnson,	New York,	New York
1882	Wm. H. Johnston,	Port Leyden,	Lewis
1856	James V. Kendall,	Baldwinsville,	Onondaga
1880	Herman Knapp,	New York,	New York
1889	Paul H. Kretzschmar,	Brooklyn,	Kings
1887	W. S. Layman,	Schoharie,	Schoharie
1878	James R. Leaming,	New York,	New York
1875	Joseph Lewi,	Albany,	Albany
1884	Daniel Lewis,	New York,	New York
1868	David Little,	Rochester,	Monroe
1884	A. V. B. Lockrow,	New York,	New York
1885	J. D. Lomax,	Troy,	Rensselaer
1886	Alfred L. Loomis,	New York,	New York
1882	E. H. Loughran,	Kingston,	Ulster
1871	R. Loughran,	Kingston,	Ulster
1871	Frank S. Low,	Pulaski,	Oswego
1888	James Macfie,	Fort Covington,	Franklin
1888	F. E. Martindale,	Port Richmond,	Richmond
1889	A. Ross Matheson,	Brooklyn,	Kings
1879	Arthur Mathewson,	Brooklyn,	Kings
1872	Leroy McLean,	Troy,	Rensselaer
1884	Alfred Mercer,	Syracuse,	Onondaga
1888	C. S. Merrill,	Albany,	Albany
1888	Lewis H. Miller,	Brewster,	Putnam
1889	W. Oliver Moore,	New York,	New York
1870	Henry D. Noyes,	New York,	New York
1888	Fesenden N. Otis,	New York,	New York
1886	William C. Otterson,	Brooklyn,	Kings
1882	D. Pardee,	Fulton,	Oswego
1858	Edward H. Parker,	Poughkeepsie,	Dutchess
1887	Edward L. Partridge,	New York,	New York
1881	S. H. Peck,	Ithaca,	Tompkins
1889	F. M. Perine,	Dansville,	Livingston
1883	A. M. Phelps,	New York,	New York
1880	Henry G. Piffard,	New York,	New York
1889	Burke Pillsbury,	Middletown,	Orange
1880	J. O. Polhemus,	Nyack,	Rockland
1886	Oren D. Pomeroy,	New York,	New York
1881	Thomas R. Pooley,	New York,	New York
1869	Charles H. Porter,	Albany,	Albany
1883	W. W. Potter,	Buffalo,	Erie
1879	Jonathan S. Prout,	Brooklyn,	Kings
1872	P. V. S. Pruyn,	Kinderhook,	Columbia
1877	A. E. M. Purdy,	New York,	New York
1889	Clarence C. Rice,	New York,	New York

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Year of Election.			County.
1872	Charles E. Rider,	Rochester,	Monroe
1882	J. O. Roe,	Rochester,	Monroe
1882	Frank W. Rockwell,	Brooklyn,	Kings
1878	D. B. St. John Roosa,	New York,	New York
1887	Zotique Rousseau,	Troy,	Rensselaer
1866	Lewis A. Sayre,	New York,	New York
1885	George Seymour,	Utica,	Oneida
1860	William P. Seymour,	Troy,	Rensselaer
1871	B. F. Sherman,	Ogdensburgh,	St. Lawrence
1884	Samuel Sherwell,	Brooklyn,	Kings
1870	George F. Shrady,	New York,	New York
1888	A. R. Simmons,	Utica,	Oneida
1878	George C. Smith,	Roundout,	Ulster
1867	Wm. Manlius Smith,	Syracuse,	Onondaga
1873	H. G. P. Spencer,	Watertown,	Jefferson
1886	James D. Spencer,	Watertown,	Jefferson
1872	T. H. Squire,	Elmira,	Chemung
1884	C. S. Starr,	Rochester,	Monroe
1879	C. L. Stiles,	Owego,	Tioga
1880	E. V. Stoddard,	Rochester,	Monroe
1889	Charles Stover,	Amsterdam,	Montgomery
1888	W. H. Stuart,	Norwich,	Chenango
1882	Frederic R. Sturgis,	New York,	New York
1885	A. Walter Suiter,	Herkimer,	Herkimer
1882	Samuel G. Swift,	Yonkers,	Westchester
1877	William Taylor,	Canastota,	Madison
1886	Robert Thomson,	Troy,	Rensselaer
1888	J. Mott Throop,	Lebanon,	Madison
1888	D. M. Totman,	Syracuse,	Onondaga
1886	Richard D. Traver,	Troy,	Rensselaer
1889	Willis G. Tucker,	Albany,	Albany
1880	R. K. Tuthill,	Poughkeepsie,	Dutchess
1889	S. O. Vander Poel,	New York,	New York
1876	Albert VanderVeer,	Albany,	Albany
1876	Solomon Van Etten,	Port Jervis,	Orange
1886	Eugene Van Slyke,	Albany,	Albany
1886	Theodore C. Wallace,	Cambridge,	Washington
1873	R. H. Ward,	Troy,	Rensselaer
1883	Samuel B. Ward,	Albany,	Albany
1885	John S. Warren,	New York,	New York
1883	David Webster,	New York,	New York
1888	Louis A. Weigel,	Rochester,	Monroe
1869	William C. Wey,	Elmira,	Chemung
1889	John T. Wheeler,	Chatham,	Columbia
1883	J. W. Whitbeck,	Rochester,	Monroe
1887	Jarvis S. Wight,	Brooklyn,	Kings
1883	C. E. Willard,	Catskill,	Greene

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Year of Election.			County.
1885	C. M. Wilson,	Gouverneur,	St. Lawrence
1886	Thomas Wilson,	Claverack,	Columbia
1889	Gustavus S. Winston,	New York,	New York
1881	C. E. Witbeck,	Cohoes,	Albany
1889	R. A. Witthaus,	New York,	New York
1887	W. Gill Wylie,	New York,	New York

III. Non-resident Members.

(Art. I., Sec. 5, last paragraph, of the By-laws.)

Year of Election.			County.
1884	J. Q. Adams,	Pasadena,	California
1864	E. M. Alba,	St. Augustine,	Florida
1867	Reuben Blawis,	Rowley's Bay,	Wisconsin
1862	Joseph Beattie,	Richmond,	Virginia
1862	H. A. Carrington,	New Haven,	Connecticut
1846	N. S. Davis,	Chicago,	Illinois
1874	A. T. Douglas,	New London,	Connecticut
1857	Sanford B. Hunt,	Newark,	New Jersey
1860	J. H. Jerome,	Saginaw City,	Michigan
1864	Charles McMillan,	Rome,	Italy
1861	John McNulty,	Knoxville,	Tennessee
1855	G. C. Monell,	Omaha,	Nebraska
1833	John G. Morgan,	St. Louis,	Missouri
1857	J. C. Morse,	Sabula,	Iowa
1869	James B. Murdoch,	Pittsburg,	Pennsylvania
1875	J. H. Pooley,	Columbus,	Ohio
1872	Arthur S. Wolff,	Brownsville,	Texas

IV. Retired Permanent Members.

The following By-Law was adopted February 3, 1881 (see *Trans.* 1881, page 38): Permanent members of the age of sixty years and upward, who have been permanent members ten years, on making application to the Secretary, the application being accompanied with the Treasurer's certificate that all dues have been paid up to that date, shall be placed on the list of Retired Permanent Members, and shall thereafter be exempt from the payment of dues, and have the rights and privileges of honorary members. Such retired permanent members may be restored to full permanent membership on payment of half the amount of dues that would have accrued during their period of retirement.

Year of Election.			Year of Retirement.
1865	Edmund S. F. Arnold	Newport, R. I.	1881
1858	Charles G. Bacon	Fulton, N. Y.	1884
1857	M. M. Bagg	Utica, N. Y.	1883
1859	John Ball	Brooklyn, N. Y.	1883
1878	Newton H. Ballou	Lansingburgh, N. Y.	1887
1863	C. V. Barnett	Coxsackie, N. Y.	1883
1867	Lyman Barton	Willsborough, N. Y.	1883
1866	A. N. Bell	Brooklyn, N. Y.	1881

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Year of Election.			Year of Retirement.
1868	Israel I. Buckbee	Fonda	1882
1866	Thompson Burton	Fultonville	1881
1868	Alonzo Churchill	Utica, N. Y.	1884
1854	Thomas F. Cock	New York, N. Y.	1881
1867	Darwin Colvin	Clyde, N. Y.	1884
1867	H. S. Crandall	Leonardsville, N. Y.	1883
1870	Ellsworth Eliot	New York, N. Y.	1887
1871	Nelson Fanning	Catskill, N. Y.	1882
1870	Robert Frazier	Camden, N. Y.	1887
1862	S. H. Freeman	Albany, N. Y.	1886
1887	T. Hammond	Dover Plains	1889
1874	B. L. Hovey	Rochester, N. Y.	1885
1868	Samuel T. Hubbard	New York, N. Y.	1885
1858	N. C. Husted	Tarrytown, N. Y.	1885
1857	Jonathan Kneeland	South Onondaga, N. Y.	1881
1861	Nelson Nivison	Burdette, N. Y.	1881
1863	Wm. H. H. Parkhurst	Frankfort, N. Y.	1883
1873	John Parr	Buel, N. Y.	1886
1881	John C. Peters	New York, N. Y.	1884
1859	Henry N. Porter	New York Mills, N. Y.	1881
1868	William Russell	Utica, N. Y.	1884
1869	William T. Swart	Canandaigua, N. Y.	1881
1865	Isaac E. Taylor	New York, N. Y.	1883
1871	N. R. Tefft	Onondaga, N. Y.	1883
1864	James S. Whaley	Rome, N. Y.	1881
1846	John H. Wheeler	Athens, N. Y.	1883
1868	Lewis H. White	Fishkill, N. Y.	1882
1879	William T. White	New York, N. Y.	1889
1865	Julien T. Williams	Dunkirk, N. Y.	1880
1867	Charles S. Wood	New York, N. Y.	1885

V. Honorary Members.

Year of Election.		Year of Election.	
1864	J. Adams Allen, Mich.	1884	W. G. Brownson, New Canaan, Conn.
1889	Francis Bacon, New Haven, Conn.	1881	J. C. Bucknill, London, Eng.
1888	B. F. Baer, Philadelphia, Pa.	1877	S. C. Busey, Washington, D. C.
1882	R. Bartholow, Philadelphia, Pa.	1855	H. A. Buttolph, Trenton, N. J.
1880	J. S. Billings, U. S. Army	1871	W. H. Byford, Chicago, Ill.
1879	H. I. Bowditch, Boston, Mass.	1885	J. L. Cabell, Univ. of Virginia
1862	H. Bronson, New Haven, Conn.	1885	T. S. Clouston, Edinburgh, Scotland
1880	J. B. Brown, U. S. Army	1875	J. M. DaCosta, Philadelphia, Pa.
1877	W. A. F. Brown, Dumfries, Scotland	1866	N. S. Davis, Chicago, Ill.
1886	E. N. Brush, Philadelphia, Pa.	1875	F. Dichiara, Palermo, Italy
1867	C. E. Brown-Séquard, London, England	1887	B. Dowler, New Orleans, La.
		1874	J. Matthews Duncan, Edinburgh, Scotland

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Year of Election.

1859 Silas Durkee, Boston, Mass.
1863 P. W. Ellsworth, Hartford, Conn.
1888 G. E. Fenwick, Montreal, Can.
1861 W. Frazer, Montreal, Canada
1883 Wm. Goodell, Philadelphia, Pa.
1887 J. A. S. Grant, Cairo, Egypt
1875 E. H. Gregory, St. Louis, Mo.
1887 A. P. Grinnell, Burlington, Vt.
1886 T. Hansen, Copenhagen, Denmark
1889 Reginald Harrison, Liverpool, England.
1860 E. Hart, London, England
1879 C. Heath, London, England
1882 C. N. Hewitt, Red Wing, Minn.
1877 W. S. Hopkins, Vergennes, Vt.
1854 O. P. Hubbard, Hanover, N. H.
1871 E. K. Hunt, Hartford, Conn.
1875 E. M. Hunt, Metuchen, N. J.
1857 H. J. Hunter, Sheffield, Eng.
1870 Ralph Isham, Chicago, Ill.
1862 John Jeffries, Boston, Mass.
1863 T. Jennings, Nashville, Tenn.
1861 P. A. Jewett, New Haven, Conn.
1887 E. Landolt, Paris, France
1873 J. M. Jones, Washington, D. C.
1870 H. M. Knight, Lakeville, Conn.
1873 H. C. Lombard, Geneva, Switzerland
1871 W. McCollom, Brooklyn, N. Y.
1872 R. McNamara, Dublin, Ireland
1889 Morell Mackenzie, London, Eng.
1889 Howard Marsh, London, Eng.
1879 L. A. Mercier, Paris, France
1877 S. Weir Mitchell, Phila., Pa.

Year of Election.

1852 G. W. Norris, Philadelphia, Pa.
1875 L. W. Oakley, Elizabeth, N. J.
1889 Wm. Pepper, Philadelphia, Pa.
1840 Placido Portal, Palermo, Italy
1852 Samuel S. Purple, New York
1882 Sidney Ringer, London, Eng.
1875 Benjamin W. Richardson, London, England
1883 C. L. Robertson, London, Eng.
1864 W. M. Rutherford, Harrisburg, Pa.
1853 Albert Sager, Michigan
1889 Max. Schede, Hamburg, Germ'y
1888 F. J. Shepherd, Montreal, Can.
1864 W. J. Sloan, U. S. Army
1866 Albert Smith, Peterboro, N. Y.
1860 Alfred Stillé, Philadelphia, Pa.
1873 R. Stokes, Dublin, Ireland
1871 D. H. Storer, Boston, Mass.
1886 L. Tait, Birmingham, Eng.
1866 S. W. Thayer, Burlington, Vt.
1870 W. H. Thayer, Brooklyn, N. Y.
1875 J. M. Toner, Washington, D. C.
1873 T. J. Turner, U. S. Navy
1872 R. Virchow, Berlin, Germany
1871 J. H. Webb, Galveston, Texas
1877 L. de Wecker, Paris, France
1874 T. S. Wells, London, England
1885 J. T. Whittaker, Cincinnati, O.
1867 Stephen Wicks, Orange, N. J.
1888 D. M. Wilcox, Lee, Mass.
1862 A. Woodward, Franklin, Conn.
1885 T. G. Wormley, Phila., Pa.
1871 W. Worthington, West Chester, Pa.

PERSONS ELIGIBLE TO MEMBERSHIP.

I. Eligible to Permanent Membership.

1. became eligible before february 1, 1886.

(All persons on this list may become permanent members by notifying the Secretary and paying initiation fees. See Resolution, page 24, *Transactions*, 1886.)

Became Eligible.

1862 James H. Curry, Westchester
1862 John P. Garish, New York
1865 Avery Cook, Orange

Became Eligible.

1867 James Anderson, New York
1867 Andrew Otterson, Kings
1867 Christopher Prince, New York

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Became Eligible.	
1868	Edward H. Janes, New York
1869	Isaac H. Barber, Kings
1870	Horace Lathrop, Otsego
1870	John S. Young, Kings
1871	William Bassett, Broome
1872	Fred. A. Burrall, New York
1872	G. M. Smith, New York
1873	William H. Nelson, Oneida
1874	Israel C. Bourne, Delaware
1874	Lemuel Cross, Schoharie
1874	Joseph Gardner, Oswego
1874	George P. Salmon, Columbia
1875	Safford E. Hale, Essex
1876	A. H. Crosby, Lewis
1876	W. F. Nutten, Wayne
1876	J. G. Porteous, Dutchess
1877	L. H. Hill, Otsego
1878	W. L Cooper, Rensselaer
1879	Thomas Beckett, Albany
1879	H. S. Case, Albany
1879	Ira F. Hart, Chemung
1879	Louis A. Tourtellot, Oneida
1880	Edwin Evans, Oneida
1880	William H. Leonard, Otsego

Became Eligible.	
1881	N. W. Bates, Oswego
1882	Edwin Barnes, Dutchess
1882	C. S. Bull, New York
1882	Alfred Hasbrouck, Dutchess
1882	John Lambert, Washington
1882	George M. Palmer, Wyoming
1882	Charles R. Lee, Oswego
1883	A. D. Head, Onondaga
1883	Daniel B. Howard, Warren
1883	H. C. Palmer, Oneida
1883	Maurice Perkins, Schenectady
1883	William T. Plant, Onondaga
1883	Conant Sawyer, Essex
1884	W. R. Birdsall, New York
1884	John C. Boyd, Orange
1884	E. E. Houghton, Otsego
1884	Joseph H. Hunt, Kings
1884	A. M. Jacobus, New York
1884	Charles M. Lefler, Fulton
1884	A. S. Seeber, Otsego
1885	A. C. Benedict, Westchester
1885	Joseph Moffat, Orange
1885	J. Densmore Potter, Onondaga

2. BECAME ELIGIBLE SINCE FEBRUARY 1, 1886.

(Persons on this list, who desire to become permanent members, should notify the Secretary of their wish, either before or at an annual meeting. Their names are then read at the meeting, and, if no objection is made, they are made permanent members by vote of the Society. See page 33, *Transactions*, 1886.)

Became Eligible.	
1886	C. L. Dana, New York
1886	F. M. Hamlin, Cayuga
1886	L. E. Jones, Jefferson
1886	Milton J. Roberts, New York
1887	O. C. Baker, Washington
1887	C. E. Douglass, Lewis
1887	L. Emmett Holt, New York
1887	Wm. M. McLaury, New York
1887	R. J. Roscoe, Schoharie
1887	M. H. Turner, Essex
1888	H. D. Blanchard, Otsego
1888	H. W. Boorn, Otsego
1888	A. N. Brockway, New York
1888	H. Craft, Ulster
1888	O. B. Douglas, New York

Became Eligible.	
1888	Z. T. Emery, Kings
1888	E. D. Fisher, New York
1888	C. W. Hamlin, Herkimer
1888	C. C. Harvey, Yates
1888	William E. Johnson, Tioga
1888	O. F. Kinlock, Rensselaer
1888	D. M. Lee, Chenango
1888	Carlos F. McDonald, Cayuga
1888	J. Alexander Moore, New York
1888	Prince A. Morrow, New York
1888	Joseph Pero, Oswego
1888	Wendell C. Phillips, New York
1888	L. S. Pilcher, Kings
1888	Frank W. Ring, New York
1889	William B. Brown, Steuben

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Became Eligible.	
1889	S. W. Close, St. Lawrence
1889	W. J. Conklin, Dutchess
1889	Floyd S. Crego, Erie
1889	C. M. Culver, Albany
1889	Archibald Dann, Monroe
1889	Charles Dickinson, Schoharie
1889	Benjamin A. Fordyce, Cayuga
1889	A. J. Hepburn, New York
1889	Amanda S. Hickey, Cayuga
1889	Herbert G. Jones, Oneida
1889	D. S. Kellogg, Clinton
1889	Maurice J. Lewi, Albany
1889	H. P. Loomis, New York
1889	William Maddren, Kings
1889	M. L. Mallory, Monroe
1889	H. C. May, Steuben
1889	George H. Oliver, Franklin
1889	Mrs. May R. Owen, Kings
1889	Henry T. Pierce, New York
1889	Frank H. Potter, Erie
1889	F. W. Putnam, Broome
1889	T. E. Satterthwaite, New York
1889	B. U. Steenberg, Albany
1889	William G. Stevenson, Dutchess
1889	W. A. Vincent, Jefferson

II. Eligible to Honorary Membership.

Became Eligible.	
1855	John H. Ridell
1855	Christopher Widner
1863	Ralph Deming, Litchfield, Conn.
1863	H. G. Stevens, St. Albans, Vt.
1868	W. Livingston, St. Johns, N. B.
1871	J. J. H. Love, Montclair, N. J.
1880	W. Carpenter, Burlington, Vt.
1887	H. C. Allchin, London, Eng.
1889	Lennox Browne, London, Eng.
1889	G. J. Engelmann, St. Louis, Mo.
1889	J. Nevins Hyde, Chicago, Ill.
1889	R. J. Levis, Philadelphia, Pa.
1889	E. E. Montgomery, Phila., Pa.
1889	Joseph Price, Philadelphia, Pa.
1889	W. H. Taylor, Cincinnati, Ohio

PHYSICIANS

On whom the Honorary Degree of Doctor of Medicine has been Conferred by the Regents of the University, on the Recommendation of the State Medical Society.

(This Society is restricted by statute from nominating more than four persons to the honorary Degree of Doctor of Medicine in any one year. And by various resolutions it has been determined that the respective candidates must possess moral and professional standing, must be of the age of twenty-five years or upward, and must receive not less than two-thirds of the votes of the members present. The mode of the nomination shall be as follows:

The Society shall, by open nomination, present the names of any number of physicians, and afterward the names of the candidates, or such of them as each member shall please to vote for, not to exceed four, shall be voted for in one ballot; and so many as on this ballot shall appear to have received two-thirds of all the votes of all the members present, and those only, shall be the persons presented.)

1861	Charles G. Bacon, Oswego
1857	Milton Barnett, Madison
1864	R. Spencer Chapin, New York
1855	Alonzo Churchill, Utica, Oneida
1841	Claudius C. Coan, Seneca
1834	Robert Collins, Rensselaer
1876	Samuel M. Crawford, Orange
1860	Francis J. D'Avignon, Clinton
1874	Peter Denny, Dutchess
1834	George Eager, Orange

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1870 Tobias J. Greene, Oswego
1852 Abel Huntington, Suffolk
1832 Lucius Kellogg, Queens
1852 Erastus King, Otsego
1855 Jonathan Kneeland, Onondaga
1859 Richard Lanning, Tompkins
1870 E. S. Lyman, Chenango
1845 William Mason, Chenango
1844 Samuel Maxwell, Fulton
1841 John Merriman, Columbia
1853 Elias P. Metcalf, Livingston
1846 Greene Miller, Ulster
1844 William W. Miner, New York
1874 William Newmann, New York
1832 George W. Phillips, Tompkins
1848 Eliphalet Platt, Dutchess
1856 Medina Preston, Oneida
1833 Asahel Prior, Madison
1848 George C. Schaeffer, New York
1872 Cornelius H. Schapps, Kings
1875 Henry C. Seely, Orange
1845 Samuel Shumway, Essex
1827 James Stevenson, Washington
1859 James M. Sturtevant, Oneida
1873 Nathan R. Tefft, Onondaga
1860 Harrison Teller, Kings
1833 Josiah Trowbridge, Erie
1867 John VanNess, Kings
1847 John W. Weed, New York
1857 Hiram Wotkyns, Rensselaer

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IN MEMORIAM.

1. Deceased Permanent Members.

Year of Election	Name	Date of Death.	Age.	Residence.
1863	Hiram Adams,	March 9, 1865,	62	Fabius, Onondaga
1861	John G. Adams,	June 19, 1884,	77	New York
1861	Cornelius R. Agnew,	April 18, 1888,	58	New York
1859	Richard L. Allen,	May 15, 1873,	65	Saratoga Springs, Saratoga
1867	William L. Appley,	Jan. 6, 1877,	—	Cochecton, Sullivan
1852	James H. Armsby,	Dec. 3, 1875,	66	Albany, Albany
1856	E. W. Armstrong,	Aug. 14, 1877,	88	Rochester, Monroe
1863	Alexander Ayres,	Aug. 27, 1886,	75	Fort Plain, Montgomery
1826	Daniel Ayres,	May 25, 1863,	66	Amsterdam, Montgomery
1870	James L. Babcock,	Feb. 13, 1881,	55	Albany, Albany
1856	Fred F. Backus,	Nov. 4, 1858,	64	Rochester, Monroe
1874	James S. Bailey,	July 1, 1883,	53	Albany, Albany
1869	James L. Banks,	June 3, 1883,	51	New York
1813	Samuel Bard,	May 24, 1821,	79	New York
1850	Enos Barnes,	July 9, 1862,	78	Watkins, Schuyler
1860	Charles Barrows,	Oct. 2, 1870,	—	Clinton, Oneida
1853	Joseph Bates,	May 23, 1879,	75	N. Lebanon, Columbia
1819	William Bay,	Sept. 7, 1865,	91	Albany, Albany
1866	Edward L. Beadle,	April 5, 1882,	83	Poughkeepsie, Dutchess
1829	John B. Beck,	April 6, 1851,	56	New York
1817	T. Romeyn Beck,	Nov. 19, 1855,	64	Albany, Albany
1858	Seneca Beebe,	Nov. 10, 1881,	65	Marathon, Cortland
1866	H. K. Bellows,	March 30, 1880,	57	Norwich, Chenango
1838	A. G. Benedict,	Oct. 4, 1882,	72	Red Hook, Dutchess
1880	M. D. Benedict,	Jan. 7, 1885,	70	Syracuse, Onondaga
1868	William B. Bibbins,	Jan. 16, 1871,	47	New York
1865	Uriah G. Bigelow,	Feb. 23, 1873,	52	Albany, Albany
1856	Daniel P. Bissell,	Oct. 29, 1874,	72	Utica, Oneida
1854	Arba Blair,	June 20, 1863,	82	Rome, Oneida
1845	Thos. W. Blatchford,	Jan. 7, 1866,	71	Troy, Rensselaer
1863	Douglass Bly,	May 10, 1876,	52	Rochester, Monroe
1858	Alfred Bolter,	July 12, 1880,	69	Ovid, Seneca
1866	Gideon Botsford,	Sept. 17, 1880,	69	Greenville, Greene
1868	J. R. Boulware,	Oct. 17, 1887,	67	Albany, Albany
1846	Benjamin E. Bowen,	March 12, 1878,	77	Mexico, Oswego
1859	James P. Boyd,	May 10, 1881,	77	Albany, Albany
1847	George W. Bradford,	Oct. 31, 1883,	87	Syracuse, Onondaga

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1850	Thos. C. Brinsmade,	June 12, 1868,	66	Troy, Rensselaer
1871	Walter Booth,	—— ——	—	Boonville, Oneida
1855	Oliver Brisbin,	July 12, 1871,	76	Schuylerville, Saratoga
1823	Thomas Brodhead,	Nov. 11, 1830,	65	Clermont, Columbia
1882	P. Brooks,	March 2, 1864,	39	Binghamton, Broome
1860	Peletiah B. Brooks	Feb. 27, 1874,	86	Binghamton, Broome
1845	John R. Brown,	Feb. 28, 1868,	78	Little Falls, Herkimer
1874	Gurdon Buck,	March 6, 1877,	70	New York
1888	F. G. Buckbee,	Oct. 22, 1888,	38	Fonda, Montgomery
1863	Henry D. Buckley,	Jan. 4, 1872,	67	New York
1870	Francis Burdick,	March 22, 1877,	59	Johnstown, Fulton
1853	Phineas H. Burdick,	March 28, 1870,	69	Preble, Cortland
1854	George Burr,	Oct. 20, 1882,	70	Binghamton, Broome
1843	E. B. Burroughs,	June 26, 1843,	41	Greene, Chenango
1857	C. V. W. Burton,	Sept. 23, 1860,	50	Lansingburgh, Rensselaer
1837	Bryant Burwell,	Sept. 8, 1861,	65	Buffalo, Erie
1885	Wesley M. Carpenter,	Jan. 7, 1888,	48	New York
1855	Edson Carr,	Nov. 28, 1861,	60	Canandaigua, Ontario
1866	Wm. F. Carter,	April 20, 1866,	54	Cohoes, Albany
1845	Merritt H. Cash,	April 26, 1861,	59	Ridgbury, Orange
1827	John H. Cheeseman,	Oct. 11, 1862,	75	New York
1864	H. S. Chubbuck,	March 4, 1883,	74	Elmira, Chemung
1850	Alonzo Clark,	Sept. 13, 1887,	80	New York
1860	Darius Clark,	Jan. 23, 1871,	72	Canton, St. Lawrence
1862	Jabez Vaughn Cobb,	Aug. 28, 1877,	66	Lockport, Niagara
1857	Mason F. Coggswell,	Jan. 21, 1864,	54	Albany, Albany
1863	George Cook,	June 12, 1876,	55	Canandaigua, Ontario
1863	John R. Cooper,	April 8, 1887,	59	Poughkeepsie, Dutchess
1850	Hiram Corliss,	Sept. 7, 1877,	83	Greenwich, Washington
1855	John Cotes,	Feb. 26, 1859,	64	Batavia, Genesee
1873	John R. Cotes,	March 20, 1884,	55	Batavia, Genesee
1860	Levant B. Cotes,	Sept. 11, 1880,	79	Batavia, Genesee
1822	Alexander Coventry,	Dec. 9, 1831,	65	Utica, Oneida
1841	Charles B. Coventry,	Feb. 23, 1875,	76	Utica, Oneida
1859	C. Milford Crandall,	Oct. 4, 1867,	41	Belfast, Allegany
1881	John C. Dalton,	Feb. 12, 1889,	63	New York
1879	John Davidson,	Dec. 26, 1884,	91	Hempstead, Queens
1868	Henry W. Deane,	Jan. 13, 1878,	58	Rochester, Monroe
1860	John Demarest,	Oct. 8, 1882,	73	Spring Valley, Rockland
1818	Cornelius E. DePuy,	Lost at sea, '22	30	New York
1852	Nicoll H. Dearing,	Dec. 19, 1867,	73	Utica, Oneida
1857	James Diefendorf,	Jan. 11, 1868,	60	Milwaukee, Wisconsin
1873	D. G. Dodge,	Dec. 30, 1877,	53	Rouse's Point, Clinton
1853	A. F. Doolittle,	May 23, 1872,	61	Herkimer, Herkimer
1829	H. W. Doolittle,	Dec. 8, 1853,	65	Herkimer, Herkimer
1863	Henry S. Downs,	May 2, 1879,	57	Brooklyn, Kings

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1853	Benjamin Drake,	Jan. 11, 1871,	65	New York
1821	Charles Drake,	April —, 1832,	42	New York
1886	F. R. S. Drake,	March 11, 1888,	43	New York
1881	William H. Dudley,	Oct. 9, 1886,	75	Brooklyn, Kings
1868	Hiram N. Eastman,	Oct. 14, 1879,	69	Owego, Tioga
1865	Sanford Eastman,	Jan. 8, 1874,	58	Buffalo, Erie
1825	Jonathan Eights,	Aug. 10, 1848,	75	Albany, Albany
1882	Louis Elsberg,	Feb. 19, 1885,	49	New York
1815	John Ely,	Aug. 23, 1849,	75	Coxsackie, Greene
1836	Sumner Ely,	Feb. 3, 1857,	70	Clarksville, Otsego
1876	William W. Ely,	March 27, 1879,	67	Rochester, Monroe
1861	Franklin Evarts,	Feb. 12, 1864,	36	Oswego, Oswego
1879	Horace P. Farnham,	June 9, 1886,	64	New York
1857	Levi Farr,	July 18, 1859,	72	Greene, Chenango
1858	Warren Fay,	Feb. 18, 1875,	78	Pavilion, Genesee
1865	John Ferguson,	Oct. 13, 1874,	62	Albany, Albany
1879	M. L. Finch,	March 6, 1871,	56	Jonesville, Saratoga
1855	Austin Flint,	March 13, 1886,	74	New York
1852	Charles E. Fort,	Nov. 11, 1856,	62	Batavia, Genesee
1832	Joel Foster,	June 29, 1884,	82	New York
1846	James Fountain,	May 19, 1869,	80	Jefferson Valley, Westch'r
1836	Robert C. Frary,	Dec. 29, 1862,	69	Hudson, Columbia
1850	S. H. French,	May 27, 1877,	66	Lisle, Broome
1853	James M. Gardiner,	—— —, 1858,	—	Newburgh, Orange
1881	Charles C. F. Gay,	March 27, 1886,	65	Buffalo, Erie
1878	Charles H. Giberson,	April 19, 1879,	41	Brooklyn, Kings
1842	Chandler R. Gilman,	Sept. 26, 1865,	63	New York
1866	Samuel Gilmore,	Dec. 6, 1879,	76	Fleming, Cayuga
1844	Thomas Goodsell,	Jan. 12, 1864,	83	Utica, Oneida
1878	William Gould,	March 20, 1882,	71	Buffalo, Erie
1847	Edmund F. Grant,	Lost in 'Arctic' Sept. 27, 1854,	—	Dutchess
1855	Henry C. Gray,	Feb. 10, 1877,	—	N. White Creek, Wash'ton
1865	John P. Gray,	Nov. 29, 1886,	61	Utica, Oneida
1857	Abel Green,	Nov. 7, 1862,	52	Paine's Hollow, Herkimer
1856	Horace Green,	Nov. 29, 1866,	63	New York
1843	Lester Green,	Feb. 7, 1849,	52	Little Falls, Herkimer
1830	Alpheus S. Greene,	Feb. 25, 1851,	64	Watertown, Jefferson
1860	John H. Griscom,	April 28, 1874,	65	New York
1876	Desault Guernsey,	Dec. 9, 1885,	55	Amenia, Dutchess
1823	Luther Guiteau,	Feb. 25, 1850,	72	Trenton, Oneida
1855	Luther Guiteau,	June 13, 1886,	81	Trenton, Oneida
1859	Stephen Hagadorn,	Aug. 1, 1863,	52	Cohocton, Steuben
1861	C. W. Haight,	March 5, 1873,	53	Pleasantville, Westchester
1830	Moses Hale,	Jan. 3, 1837,	57	Troy, Rensselaer
1858	Edward Hall,	April 28, 1871,	50	Auburn, Cayuga

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1851	Frank H. Hamilton,	Aug. 11, 1886,	73	New York
1849	Patrick H. Hard,	—— —, 1850,	59	Oswego, Oswego
1860	Elisha Harris,	Jan. 31, 1884,	60	New York
1857	Francis L. Harris,	Feb. 22, 1876,	68	Buffalo, Erie
1853	Erastus L. Hart,	Oct. 22, 1871,	84	Elmira, Chemung
1857	Samuel Hart,	Sept. 3, 1878,	82	Brooklyn, Kings
1875	Josiah Hasbrouck,	March 25, 1889,	59	Port Ewen, Ulster
1859	Moses C. Hasbrouck,	Oct. 28, 1870,	62	Nyack, Rockland
1845	S. H. Hasbrouck,	Dec. 28, 1881,	87	Jersey City, New Jersey
1856	Abram Haun,	March 14, 1878,	72	Little Falls, Herkimer
1848	J. Edwin Hawley,	Aug. 1, 1859,	57	Ithaca, Tompkins
1887	Thomas Helme,	March 17, 1889,	57	McKownsville, Albany
1847	Truman B. Hicks,	Sept. 16, 1847,	69	Caldwell, Warren
1870	William S. Hoffman,	Jan. 8, 1882,	66	Port Byron, Cayuga
1872	M. R. Holbrook,	June 6, 1881,	62	Poughkeepsie, Dutchess
1824	Wm. Horton, Jr.,	—— —, ——,	—	Goshen, Orange
1816	David Hosack,	Dec. 22, 1835,	57	New York
1871	George H. Hubbard,	Jan. 19, 1876,	53	Lansingburgh, Rensselaer
1829	Amos G. Hull,	—— —, ——,	—	Oneida
1824	Laurens Hull,	June 27, 1865,	86	Angelica, Allegany
1873	Edward R. Hun,	March 14, 1880,	38	Albany, Albany
1865	Jacob Hunt,	April 21, 1888,	78	Utica, Oneida
1839	Phineas Hurd,	Sept. 1, 1867,	81	Scipio, Cayuga
1872	Edwin Hutchinson,	Oct. 19, 1887,	47	Utica, Oneida
1864	Joseph H. Hutchison,	July 17, 1887,	60	Brooklyn, Kings
1854	Frederick Hyde,	Oct. 15, 1887,	80	Cortland, Cortland
1845	Ferris Jacobs,	Sept. 9, 1887,	86	Delhi, Delaware
1861	J. Foster Jenkins,	Oct. 9, 1882	56	Yonkers, Westchester
1860	Harvey Jewett,	Sept. 4, 1888,	79	Canandaigua, Ontario
1850	Daniel T. Jones,	March 29, 1861,	66	Baldwinsville, Onondaga
1880	C. Henry King,	March 18, 1883,	—	Stapleton, Richmond
1870	William Lamont,	Aug. 16, 1877,	67	Charlotteville, Schoharie
1871	J. L. La Moree,	Sept. 23, 1881,	56	Grahamsville, Sullivan
1857	H. H. Langworthy,	Feb. 5, 1889,	—	Rochester, Erie
1868	John V. Lansing,	May 9, 1880,	56	Albany, Albany
1854	Charles A. Lee,	Feb. 14, 1872,	71	Peekskill, Westchester
1861	James Lee,	April 13, 1856,	47	Mechanicsville, Saratoga
1872	James L. Little,	April 4, 1885,	49	New York
1849	Dyer Loomis,	Oct. 19, 1883,	82	New Berlin, Chenango
1831	Edward G. Ludlow,	July 7, 1877,	84	Yonkers, Westchester
1838	John McCall,	Oct. 6, 1867,	80	Utica, Oneida
1840	John McClellan,	Oct. 18, 1855,	83	Hudson, Columbia
1835	Samuel McClellan,	April 8, 1855,	68	Schodack, Rensselaer
1831	James McNaughton,	June 11, 1874,	78	Albany, Albany
1856	Peter McNaughton,	Dec. 19, 1875,	75	Albany, Albany
1871	Hiram McNutt,	May 3, 1876,	55	Warrensburgh, Warren

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1887	A. Mandeville,	Aug. 31, 1888,	68	Rochester, Erie
1822	James R. Manly,	Nov. 21, 1851,	69	New York
1847	Alden March,	June 17, 1869,	73	Albany, Albany
1877	Henry March,	May 7, 1886,	59	Albany, Albany
1860	M. M. Marsh,	June 9, 1868,	56	Ripley, Ohio
1862	Theo. L. Mason,	Feb. 12, 1882,	78	Brooklyn, Kings
1844	Henry Maxwell,	July 21, 1856,	—	———, Niagara
1854	F. T. Maybury,	April 18, 1880,	65	Binghamton, Broome
1850	Nathaniel Miller,	May 7, 1863,	79	Bellport, Suffolk
1869	Julius F. Miner,	Nov. 5, 1886,	63	Buffalo, Erie
1865	James M. Minor,	March 23, 1879,	64	New York
1825	Henry Mitchell,	Jan. 12, 1856,	72	Norwich, Chenango
1819	Samuel L. Mitchell,	Sept. 7, 1831,	67	New York
1874	E. C. Moe,	April 17, 1876,	—	Ithaca, Tompkins
1860	Benjamin J. Mooers,	May 20, 1869,	82	Plattsburgh, Clinton
1867	Levi Moore,	June 30, 1880,	—	Albany, Albany
1833	John Geo. Morgan,	Oct. 4, 1878,	80	St. Louis, Missouri
1870	Jacob S. Mosher,	Aug. 13, 1883,	4º	Albany, Albany
1864	Peter Moulton,	Dec. 7, 1873,	79	New Rochelle, Westchester
1872	Charles C. Murphy,	Aug. 8, 1874,	50	East Bloomfield, Ontario
1879	B. A. Mynderse,	Oct. 2, 1887,	59	Schenectady, Schenectady
1868	Clark A. Nicholson,	——— ———,	—	Beekman, Dutchess
1861	Joseph N. Northrup,	Sept. 17, 1878,	61	Albany, Albany
1848	William S. Norton,	Feb. 20, 1873,	67	Ft. Edward, Washington
1850	Helon F. Noyes,	Jan. 13, 1872,	70	Stillwater, Minn.
1868	Evander Odell,	Jan. 13, 1883,	74	Unadilla, Otsego
1857	Andrew F. Oliver,	June 11, 1857,	65	Penn Yan, Yates
1878	F. B. Parmele,	Jan. 10, 1883,	68	Greenbush, Rensselaer
1847	Willard Parker,	April 25, 1884,	84	New York
1870	Felix Pascalis,	July 27, 1833,	71	New York
1839	Eli Pearce,	March, 1874,	—	Coesse, Ind.
1874	Roger W. Pease,	May 28, 1886,	58	Syracuse, Onondaga
1862	E. R. Peaslee,	Jan. 21, 1878,	64	New York
1828	Richard Pennel,	April 11, 1861,	62	New York
1855	James L. Phelps,	Oct. 17, 1869,	84	New York
1871	Charles G. Pomeroy,	Dec. 14, 1887,	70	Newark, Wayne
1878	W. W. Porter,	June 2, 1885,	58	Geddes, Onondaga
1883	Alfred C. Post,	Feb. 7, 1886,	80	New York
1850	Uriah Potter,	Dec. 16, 1869,	60	Ft. Plain, Montgomery
1849	John M. Pruyn,	Feb. —, 1866,	60	Kinderhook, Columbia
1862	A. G. Purdy,	April 5, 1874,	66	Oneida, Madison
1856	Jotham Purdy,	Aug. 11, 1858,	59	Elmira, Chemung
1864	Samuel A. Purdy,	Jan. 12, 1888,	76	New York
1845	William D. Purple,	May 19, 1886,	84	Greene, Chenango
1859	John Putnam,	Jan. 22, 1879,	78	Madison, Madison
1861	J. V. P. Quackenbush,	June 8, 1876,	57	Albany, Albany

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1863	Josiah Rathbun,	March 10, 1879,	84	Utica, Oneida
1854	Henry Reynolds,	Dec. 30, 1857,	68	Wilton, Saratoga
1864	J. H. Reynolds,	April 3, 1870,	42	Wilton, Saratoga
1844	John R. Rhinelander,	May 8, 1857,	65	New York
1874	William H. Rice,	Jan. 21, 1881,	60	Phœnix, Oswego
1877	Charles A. Robertson,	April 1, 1880,	51	Albany, Albany
1870	Thomas F. Rochester,	May 24, 1887,	59	Buffalo, Erie
1854	William Rockwell,	Dec. 30, 1868,	68	New York
1813	Nicholas Romayne,	July 20, 1817,	61	New York
1864	John Root,	Nov. 25, 1876,	52	Batavia, Genesee
1852	Royal Ross,	May 9, 1856,	58	New Berlin, Chenango
1867	Henry B. Salmon,	Jan. 12, 1879,	65	Stuyvesant Falls, Columbia
1855	A. L. Saunders,	March 24, 1882,	67	Brookfield, Madison
1878	P. R. H. Sawyer,	March 31, 1885,	50	Bedford, Westchester
1854	Azariah B. Shipman,	Sept. 15, 1868,	65	Syracuse, Onondaga
1859	Seth Shove,	Feb. 24, 1878,	73	Katonah, Westchester
1852	Samuel Shumway,	Aug. 8, 1874,	81	Whitehall, Washington
1856	Elbridge Simpson,	Aug. 25, 1880,	68	Hudson, Columbia
1873	James Marion Sims,	Nov. 13, 1883,	70	New York
1837	Calvin W. Smith,	Aug. 21, 1839,	61	Little Falls, Herkimer
1854	John R. Smith,	Sept. 28, 1864,	62	Alexander, Genesee
1873	T. Blanch Smith,	April 14, 1875,	40	Nyack, Rockland
1856	Jacob G. Snell,	Sept. 17, 1882,	74	Amsterdam, Montgomery
1875	Norman L. Snow,	Dec. 19, 1885,	46	Albany, Albany
1846	Simeon Snow,	Sept. 20, 1865,	62	Root, Montgomery
1849	Morgan Snyder,	Sept. 15, 1883,	74	Ft. Plain, Montgomery
1819	Lyman Spalding,	Oct. 31, 1821,	46	New York
1835	Thomas Spencer,	May 30, 1857,	65	Geneva, Ontario
1847	Alden S. Sprague,	Jan. 8, 1863,	62	Buffalo, Erie
1850	Barent P. Staats,	July 8, 1871,	74	Albany, Albany
1865	Peter P. Staats,	Oct. 20, 1874,	71	Albany, Albany
1875	J. K. Stanchfield,	July 11, 1883,	65	Elmira, Chemung
1852	Jehiel Stearns,	Oct. 8, 1878,	89	Pompey, Onondaga
1814	John Stearns,	March 17, 1848,	78	New York
1824	John H. Steel,	——, 1838,	58	———, Saratoga
1855	Ebenezer Steel,	Dec. 1856,	62	Delhi, Delaware
1848	Alex. H. Stevens,	March 30, 1869,	79	New York
1855	Philander Stewart,	Feb. 11, 1874,	54	Peekskill, Westchester
1858	James M. Sturtevant,	Aug. 10, 1873,	73	Rome, Oneida
1865	Gifford Sweet,	April 22, 1879,	66	Fairfield, Herkimer
1877	George Swinburn,	Sept. 17, 1881,	71	Rochester, Monroe
1863	John Swinburne,	March 28, 1889,	69	Albany, Albany
1834	William Taylor,	Sept. 16, 1865,	74	Manlius, Onondaga
1842	Lake I. Tefft,	May 10, 1880,	83	Syracuse, Onondaga
1851	Daniel G. Thomas,	March 27, 1880,	73	Utica, Oneida
1845	Alex. Thompson,	Sept. 21, 1869,	60	Aurora, Cayuga

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1854	James Thorn,	Nov. 27, 1876,	74	Troy, Rensselaer
1858	William Tibbits,	—— —, 1874,	—	Mechanicsville, Saratoga
1851	John E. Todd,	April 22, 1868,	62	Baldwinsville, Onondaga
1855	Freeman Tourtelot,	Dec. 14, 1868,	62	Middlegrove, Saratoga
1815	Charles D. Townsend,	Dec. 19, 1847,	69	Albany, Albany
1856	Howard Townsend,	Jan. 15, 1867,	43	Albany, Albany
1860	W. P. Townsend,	Dec. 25, 1876,	58	Goshen, Orange
1859	J. F. Trowbridge,	Feb. 19, 1872,	80	Syracuse, Onondaga
1854	L. S. Turner,	—— —, 1860,	49	Fallsburgh, Sullivan
1859	Frank Tuthill,	Aug. 27, 1865,	—	San Francisco, Cal.
1867	Alfred Underhill,	Dec. 7, 1873,	65	New York
1862	Sylv. M. Van Alstyne,	Oct. 28, 1882,	50	Richmond, Schoharie
1862	C. E. Van Anden,	Oct. 19, 1873,	54	Auburn, Cayuga
1848	Peter Van Buren,	Dec. 5, 1873,	71	New York
1860	S. O. Vander Poel,	March 12, 1886,	62	New York
1846	Harmon Van Dusen,	July 18, 1885,	82	Mineral Point, Wis.
1853	A. Van Dyck,	Aug. 31, 1871,	71	Oswego, Oswego
1846	A. Van Hoevenburgh,	July 27, 1868,	77	Kingston, Ulster
1869	J. R. Van Kleek,	Jan. 2, 1876,	67	New York
1841	Peter Van O'Linda,	Aug. 6, 1872,	74	Albany, Albany
1848	Richard A. Varick,	Aug. 10, 1871,	64	Poughkeepsie, Dutchess
1861	A. E. Varney,	Feb. 24, 1870,	63	Middleville, Herkimer
1874	Alexander M. Vedder,	Dec. 29, 1878,	68	Schenectady, Schenectady
1874	Edward S. Walker,	July 17, 1876,	54	Ilion, Herkimer
1862	John D. Watkins,	June 5, 1878,	—	Liberty, Sullivan
1826	John Watts, Jr.,	Feb. 4, 1831,	45	New York
1821	Peter Wendell,	Oct. 31, 1849,	63	Albany, Albany
1851	Silas West,	Aug. 27, 1859,	67	Binghamton, Broome
1868	John F. Whitbeck,	Dec. 8, 1880,	68	Rochester, Monroe
1861	Austin White,	Sept. 1, 1876,	—	Mexico, Oswego
1851	Barlow White,	Dec. 11, 1862,	87	Fishkill, Dutchess
1867	Devillo White,	May 10, 1882,	81	Sherburne, Chenango
1854	James Platt White,	Sept. 28, 1881,	71	Buffalo, Erie
1818	Joseph White,	June 2, 1832,	70	Cherry Valley, Otsego
1851	Joseph White,	Oct. 27, 1884,	84	Canojoharie, Montgomery
1865	Oliver White,	Nov. 7, 1879,	69	New York
1833	Samuel White,	Feb. 10, 1845,	68	Hudson, Columbia
1869	Henry B. Whiton,	May 2, 1885,	58	Troy, Rensselaer
1862	Harvey B. Wilbur,	May 1, 1883,	63	Syracuse, Onondaga
1860	C. H. Wilcox,	Nov. 7, 1862,	49	Buffalo, Erie
1886	Ira Wilcox,	March 19, 1886,	39	New York
1861	James W. Wilkie,	March 13, 1876,	51	Auburn, Cayuga
1845	Augustus Willard,	March 12, 1868,	69	Greene, Chenango
1859	Horace K. Willard,	June 3, 1883,	76	East New York, Queens
1858	Sylvester D. Willard,	April 2, 1865,	39	Albany, Albany
1828	Platt Williams,	Dec. 8, 1870,	—	Albany, Albany

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1816	Westel Willoughby,	Oct. 3, 1844,	75	Newport, Herkimer
1815	William Wilson,	—— —, 1829,	—	Clermont, Columbia
1856	D. C. Winfield,	May 23, 1878,	61	Middletown, Orange
1832	Joel A. Wing,	Sept. 6, 1852,	64	Albany, Albany
1845	Charles Winnie,	May 9, 1877,	65	Buffalo, Erie
1885	H. R. Winter,	—— ——,	—	Phœnicia, Ulster
1847	Nelson Winton,	Aug. 27, 1864,	64	Havana, Schuyler
1864	S. G. Wolcott,	June 3, 1883,	63	Utica, Oneida
1855	Jas. Rushmore Wood,	May 4, 1882,	66	New York
1886	William Woodward,	June 30, 1887,	70	Big Flats, Chemung
1825	Alfred Wotkyns,	Dec. 23, 1886,	78	Troy, Rensselaer

II. Deceased Honorary Members.

1874	Washington L. Atlee,	Sept. 7, 1878,	70	Philadelphia, Pa.
1854	John P. Batcheldor,	April 7, 1868,	82	New York
1845	Lewis C. Beck,	April 20, 1853,	55	New Jersey
1865	Josiah G. Beckwith,	March 21, 1871,	68	Litchfield, Conn.
1837	Luther V. Bell,	Feb. 11, 1862,	55	Massachusetts
1868	N. D. Benedict,	April, 1871,	—	St. Augustine, Fla.
1839	Jacob Bigelow,	Jan. 10, 1879,	91	Boston, Mass.
1874	C. William Boeck,	Dec. 1875,	67	Christiania, Norway
1863	W. Braithwaite,	Jan. 31, 1885,	78	London, England
1844	Amariah Brigham,	Sept. 9, 1849,	51	New York
1863	Samuel W. Butler,	Jan. 6, 1874,	50	Philadelphia, Pa.
1862	Wm. B. Carpenter,	Nov. 9, 1885,	73	London, England
1870	Joseph Carson,	Dec. 30, 1876,	68	Philadelphia, Pa.
1860	Benj. Hopkins Catlin,	—— ——,	—	Meriden, Conn.
1833	Walter Channing,	July, 1876,	—	Brookline, Mass.
1823	Nathaniel Chapman,	July 1, 1853,	72	Philadelphia, Pa.
1847	Henry H. Childs,	March 22, 1868,	84	Pittsfield, Mass.
1878	Clarkson C. Collins,	April 10, 1881,	60	Great Barrington, Mass.
1864	James Couper,	Aug. 1865,	—	Newcastle, Del.
1868	Joseph K. Barnes,	April 5, 1883,	66	Washington, D. C.
1861	Dixi Crosby	Sept. 26. 1873,	74	Hanover, N. H.
1834	Jas. Conquest Cross,	—— ——,	—	Kentucky
1863	John M. Cuyler,	April 26, 1874,	74	Morristown, New Jersey
1859	John De La Mater,	March 28, 1876,	—	Cleveland, Ohio
1858	Sam'l Henry Dickson,	March 31, 1872,	74	Charlestown, S. C.
1879	Greensville Dowell,	June 9, 1881,	55	Galveston, Texas
1624	Daniel Drake,	Nov. 12, 1852,	67	Cincinnati, Ohio
1841	Benj. W. Dudley,	Jan. 20, 1870,	80	Lexington, Ky.
1836	Robley Dunglison,	April 1, 1869,	71	Philadelphia, Pa.
1835	John Eberle,	Feb. 2, 1838,	50	Ohio
1881	William Farr,	April 14, 1883,	75	London, England
1853	John W. Francis,	Feb. 8, 1861,	72	New York

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1825	Jos. Adams Gallup,	Oct. 1849,	80	Burlington, Vt.
1861	T. G. Geoghegan,	Dec. 1869,	—	Dublin, Ireland
1830	John W. Gloninger,	March 10, 1874,	75	Lebanon, Pa.
1867	Middleton Goldsmith,	Nov. 26, 1887,	69	Rutland, Vt.
1879	Wm. Warren Greene,	Sept. 10, 1881,	50	Portland, Me.
1856	Samuel D. Gross,	May 6, 1884,	79	Philadelphia, Pa.
1817	James Hadley,	Oct. 17, 1869,	84	Buffalo, N. Y.
1843	Enoch Hale,	——, 1848,	—	Boston, Mass.
1855	Marshall Hall,	Aug. 11, 1857,	67	London, England
1828	Wm. Hammersley,	——, 1833,	—	New York
1847	Seth Hastings,	——,	—	Oneida County, N. Y.
1842	Isaac Hays,	April 12, 1879,	83	Philadelphia, Pa.
1824	John D. Henry,	Nov. 13, 1842,	60	Rochester, N. Y.
1832	Thomas W. Henry,	——,	—	Brooklyn, N. Y.
1841	Hugh L. Hodge,	Feb. 26, 1873,	77	Philadelphia, Pa.
1856	Charles Hooker,	March 19, 1863,	64	New Haven, Conn.
1811	David Hosack,	Dec. 22, 1835,	66	New York
1830	Eli Ives,	Oct. 8, 1861,	83	New Haven, Conn.
1835	Samuel Jackson,	April 5, 1872,	85	Philadelphia, Pa.
1832	Thomas C. James,	July 25, 1835	69	Philadelphia, Pa.
1865	Wilson Jewell,	Nov. 4, 1867,	67	Philadelphia, Pa.
1868	Thos. S. Kirkbride,	Dec. 17, 1883,	74	Philadelphia, Pa.
1839	Jonathan Knight,	Aug. 25, 1864,	75	New Haven, Conn.
1828	John Lizars,	——,	—	Edinburgh, Scotland
1827	Jos. Lovell, U. S. A.,	Oct. 17, 1836,	—	Washington, D. C.
1834	Alfred T. Magill,	——.	—	Winchester, Pa.
1848	Frederick May,	Jan. 23, 18—,	74	Washington, D. C.
1831	George McClellan,	May 8, 1847,	51	Philadelphia, Pa.
1837	Charles D. Meigs,	June 22, 1869,	77	Philadelphia, Pa.
1860	George Mendenhall,	June 4, 1874,	—	Cincinnati, Ohio
1808	John Miller,	March 30, 1862,	87	Truxton, N. Y.
1811	Samuel L. Mitchell,	Sept. 7, 1831,	67	New York
1851	Stephen Mosher,	——,	—	Cincinnati, Ohio
1820	Valentine Mott,	April 26, 1865,	79	New York
1817	John Murray, Esq.,	——,	—	Edinburgh, Scotland
1833	Reuben D. Mussey,	June 31, 1866,	86	Ohio
1872	M. Nélaton,	Sept. 21, 1873,	66	Paris, France
1823	Josiah Noyes,	——, 1853,	77	Clinton, N. Y.
1838	Daniel Oliver,	——, 1842,	55	New Hampshire
1827	John Onderdonk,	Aug. 23, 1832,	64	New York
1865	Alonzo B. Palmer,	Dec. 23, 1887,	72	Ann Arbor, Mich.
1843	Willard Parker,	April 25, 1884,	84	New York
1839	Joseph Parrish,	March 18, 1840,	60	Philadelphia, Pa.
1858	Marshall S. Perry,	——, 1859,	—	Boston, Mass.
1844	John S. Peters,	——, 1858,	—	Connecticut
1825	Philip S. Physick,	Dec. 15, 1837,	70	Philadelphia, Pa.

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1861	Zina Pitcher,	April 5, 1872,	75	Detroit, Mich.
1808	John Pomeroy,	—— —, 1844,	75	Burlington, Vt.
1865	Charles A. Pope,	July 5, 1870,	—	St. Louis, Mo.
1819	Wright Post,	June 14, 1828,	61	New York
1810	Alex. Proudfit, D. D.,	—— —, 1844,	75	Salem, N. Y.
1868	Isaac Ray,	March 31, 1881,	74	Philadelphia, Pa.
1886	Jos. G. Richardson,	Nov. 13, 1886,	50	Philadelphia, Pa.
1845	Landon C. Rives,	June 3, 1870,	79	Cincinnati, Ohio
1857	John Rolf,	Oct. —, 1870,	78	Toronto, Canada
1812	Nicholas Romayne,	July 20, 1817,	61	New York
1808	Benjamin Rush,	April 13, 1813,	68	Philadelphia, Pa.
1854	Henry L. Sabin,	Feb. 25, 1884,	83	Williamstown, Mass.
1836	Thomas Sewall,	Sept. 10, 1845,	59	Washington, D. C.
1819	George C. Shattuck,	March 18, 1854,	70	Boston, Mass.
1888	Duane B. Simmons,	Feb. 19, 1889,	—	Tokio, Japan
1869	Sir James Y. Simpson,	May 8, 1870,	59	Scotland
1829	J. Augustine Smith,	Feb. 9, 1865,	83	Virginia
1842	Jerome V. C. Smith,	—— —, 1879,	—	New York
1863	Lyndon A. Smith,	Dec. 15, 1865,	70	Newark, N. J.
1880	Nathan Smith,	Jan. 26, 1829,	67	New Haven, Conn.
1871	Edwin M. Snow,	Dec. 22, 1888,	68	Providence, R. I.
1818	Lyman Spalding,	Oct. 31, 1821,	46	New York
1812	John Stearns,	March 17, 1848,	88	New York
1846	Alexander H. Stevens,	March 30, 1869,	79	New York
1846	Mat. Stevenson,	—— ——,	—	Newburgh, N. Y.
1860	Warren Stone,	—— ——,	—	New Orleans, La.
1848	Woodbridge Strong,	March 29, 1861,	67	Boston, Mass.
1880	William F. Teevan,	Oct. 22, 1887,	55	London, England
1831	Eli Todd,	Nov. 7, 1833,	64	Connecticut
1865	Charles S. Tripler,	Oct. 20, 1866,	—	U. S. Army
1838	William Tully,	March, 1859,	74	Springfield, Mass.
1867	Theodore R. Varick,	Nov. 23, 1887,	62	Jersey City, N. J.
1810	John Warren,	April 4, 1815,	62	Boston, Mass.
1819	John C. Warren,	May 4, 1856,	78	Boston, Mass.
1860	J. Mason Warren,	Aug. 19, 1867,	56	Boston, Mass.
1870	Henry S. West,	April 1, 1876,	49	Sivas, Asia Minor
1808	Moses Willard,	Dec. 6, 1826,	66	Albany, N. Y.
1829	Samuel White,	—— —, 1845,	68	Hudson, N. Y.
1840	George B. Wood,	March 30, 1879,	82	Philadelphia, Pa.

III. Deceased Honorary Doctors of Medicine.

1856	Hiram Adams,	March 9, 1865,	62	Fabius, Onondaga
1858	William L. Appley,	Jan. 6, 1877,	—	Cochecton, Sullivan
1829	Daniel Ayres,	March 25, 1853,	66	Amsterdam, Montgomery
1847	Caleb Bannister,	March 5, 1862,	80	Phelps, Ontario
1830	Enos Barnes,	July 9, 1862,	78	Watkins, Schuyler

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1861	Charles Barrows,	Oct. 2, 1870,	—	Clinton, Oneida
1844	Matthias B. Fellows,	——— ——,	— ——,	——
1857	Daniel P. Bissell,	Oct. 29, 1874,	72	Utica, Oneida
1849	Arba Blair,	June 20, 1863,	82	Rome, Oneida
1848	Benjamin E. Bowen,	March 12, 1878,	77	Mexico, Oswego
1852	Abel Brace,	Oct. 24, 1863,	70	Catskill, Greene
1846	George W. Bradford,	Oct. 31, 1883,	87	Syracuse, Onondaga
1854	Sardius Brewster,	——— ——,	—	Austinboro, Ohio
1841	Richard S. Brian,	——— ——,	— ——,	Rensselaer
1828	Thomas Brodhead,	Nov. 11, 1830,	65	Clermont, Columbia
1847	Pelatiah B. Brooks,	Feb. 27, 1874,	86	Binghamton, Broome
1851	Phineas H. Burdick,	March 28, 1870,	68	Preble, Cortland
1855	Edson Carr,	Nov. 28, 1861,	60	Canandaigua, Ontario
1859	Merritt H. Cash,	April 16, 1861,	59	Ridgeway, Orange
1851	Purcell Cooke,	Dec. 24, 1860,	— ——,	Kings
1832	Fayette Cooper,	——— ——,	—	New York
1846	Ithamar B. Crawe,	June 2, 1847,	54	Watertown, Jefferson
1832	Thos. O'H. Croswell,	January, 1844,	76	Catskill, Greene
1842	Wm. C. DeWitt,	Dec. 26, 1871,	75	——, Ulster
1834	Harvey W. Doolittle,	Dec. 8, 1853,	64	Herkimer, Herkimer
1831	Thomas Dunlop,	——, 1860,	82	Schenectady, Schenectady
1827	Jonathan Eights,	Aug. 18, 1848,	75	Albany, Albany
1831	John Ely,	Aug. 23, 1849,	75	Coxsackie, Greene
1842	Levi Farr,	July 18, 1859,	72	Greene, Chenango
1834	Asa Fitch,	Aug. 24, 1843,	77	Salem, Washington
1827	Thomas Fuller,	——— ——,	— ——,	Otsego
1858	Nelson A. Garrison,	Jan. 26, 1872,	73	——, Kings
1828	Eleazer Gedney,	——— —, 1832,	— ——,	Orange
1842	Thomas Goodsell,	Jan. 12, 1864,	83	Utica, Oneida
1832	Alpheus S. Greene,	Feb. 25, 1851,	64	Watertown, Jefferson
1850	Patrick H. Hard,	——— —, 1850,	—	Oswego, Oswego
1828	John D. Henry,	——— ——,	— ——,	Monroe
1846	Truman L. Hicks,	Sept. 16, 1847,	69	Caldwell, Warren
1854	John W. Hinckley,	——— —, 1860,	56	Albany, Albany
1858	James Hogaboom,	——— ——,	— ——,	Rensselaer
1827	Laurens Hull,	June 27, 1865,	86	Angelica, Allegany
1829	Joseph G. T. Hunt,	Aug. 1830,	47	——, Kings
1865	Ferris Jacobs,	Sept. 9, 1887,	86	Delhi, Delaware
1842	Lester Jewett,	Dec. 1863,	70	——, Seneca
1830	Consider King,	Aug. 19, 1848,	74	Wisconsin
1833	Joshua Lee,	——— ——,	— ——,	Yates
1831	John McClellan,	Oct. 18, 1855,	83	Hudson, Columbia
1850	Nathaniel Miller,	May 7, 1863,	79	——, Suffolk
1833	Benjamin J. Mooers,	May 20, 1869,	82	Plattsburgh, Clinton
1841	Henry B. Moore,	Dec. 23, 1868,	78	Coldwater, Michigan
1860	Peter Moulton,	Dec. 7, 1873,	79	New Rochelle, Westchester

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Year of Election.	Name.	Date of Death.	Age.	Residence.
1851	Heman Norton,	——, 1855,	75	——, Oneida
1857	William S. Norton,	Feb. 20, 1863,	66	Fort Edward, Washington
1871	Evander Odell,	Jan. 13, 1883,	74	Unadilla, Otsego
1845	Andrew F. Oliver,	June 11, 1857,	65	Penn Yan, Yates
1827	John Onderdonk,	Aug. 23, 1832,	64	New York
1855	James L. Phelps,	Oct. 17, 1869,	84	New York
1831	Samuel Porter,	June 14, 1843,	65	Skaneateles, Onondaga
1868	Lewis Post,	Feb. 12, 1879,	69	Lodi, Seneca
1842	William D. Purple,	May 19, 1886,	84	Greene, Chenango
1849	Lewis Riggs,	Nov. 7, 1870,	88	Homer, Cortland
1827	Gain Robinson,	——— ——,	—	——, Wayne
1858	William Rockwell,	Dec. 30, 1868,	68	New York
1865	Richard S. Satterlee,	Oct. 10, 1880,	82	New York
1829	Henry H. Sherwood,	——— ——,	—	——, Jefferson
1852	Mason G. Smith,	April 10, 1857,	—	——, Wyoming
1830	Matson Smith,	——— ——,	—	——, Westchester
1854	Jacob G. Snell,	Sept. 17, 1882,	74	Amsterdam, Montgomery
1859	Peter P. Staats,	Oct. 20, 1874,	74	Albany, Albany
1829	John H. Steel,	——— —, 1838,	58	——, Saratoga
1856	Samuel J. Swalm,	Aug. 27, 1872,	63	——, Kings
1850	James Thorn,	Nov. 27, 1876,	74	Troy, Rensselaer
1850	John E. Todd,	April 12, 1868,	62	Baldwinsville, Onondaga
1830	Chas. D. Townsend,	Dec. 19, 1847,	69	Albany, Albany
1833	Josiah Trowbridge,	Sept. 17, 1862,	77	——, Erie
1844	Peter Van O'Linda,	Aug. 6, 1872,	74	Albany, Albany
1864	Leonard G. Warren,	——— —, 1866,	63	Albany, Albany
1848	Joshua Webster,	May 2, 1849,	78	Fort Plain, Montgomery
1856	Silas West,	Aug. 26, 1859,	67	Binghamton, Broome
1845	Bartow White,	Dec. 11, 1862,	87	Fishkill, Dutchess

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COUNTY MEDICAL SOCIETIES.

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in October; semi-annual, second Tuesday in May. Stated meetings are held Wednesday evening at Alumni Hall, Albany Medical College, at least once a month, from October to May.

Officers. (October 9, 1888.)

Daniel H. Cook, President.
D. W. Houston, Vice-President.
W. O. Stillman, Secretary.
J. V. Hennessy, Treasurer.

Censors: Franklin Townsend, J. D. Craig, T. F C. Van Allen, F. R. Greene, F. C. Curtis.

Committee on Hygiene: T. K. Perry, W. H. Murray, J. H. Mitchell, E. A. Bartlett.

Delegates to State Medical Society: L. Boudrias, C. M. Culver, M. J. Lewi, B. U. Steenberg.

Members.

(Where the town is not mentioned Albany is to be understood).

J. L. Archambeault, Cohoes
Robert Babcook, 59 Eagle street
Theodore P. Bailey, 95 Eagle street
Wm. H. Bailey, 1 Washington avenue
Lewis Balch, 14 Washington avenue
O. D. Ball, 691 Broadway
James F. Barker, 54 Clinton avenue
E. A. Bartlett, 20 S. Hawk
Hiram Becker, New Salem
Thomas Becket, 276 Washington av
Herman Bendell, 178 State street
J. M. Bigelow, 52 Eagle street
L. E. Blair, 204 State street
J. H. Blatner, 132 Hudson avenue
L. Boudrias, 18 Seneca street, Cohoes
James P. Boyd, 152 Washington av
Orson Britton, 164 Elm street
R. J. Brown, 648 Central avenue
A. S. Capron, 66 Westerlo street
T. L. Carroll, 49 Spencer street
Daniel C. Case, Slingerlands
H. S. Case, 101 Madison avenue
R. D. Clark, 66 Eagle street
F. L. Classen, 66 Grand street
D. H. Cook, 264 Clinton avenue
John L. Cooper, 705 Broadway
Joseph D. Craig, 12 Ten Broeck street
Wm. H. Craig, 12 Ten Broeck street
C. H. Crawford, 280 Hudson avenue
Hiram Crounse, Clarksville
Jesse Crounse, Knowersville
C. M. Culver, 36 Eagle street
F. C. Curtis, 17 Washington avenue
J. R. Davidson, South Bethlehem
A. DeGraff, Guilderland
G. R. DeSilva, Preston Hollow
C. Devol, 48 Franklin street
Mary Dubois, 192 Hamilton street

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Noah L Eastman, 427 Clinton avenue
G. E. Elmendorf, Alcove
J. D. Featherstonhaugh, Cohoes
P. E. Fennely, West Troy
Frank H. Fisk, 91½ Hudson avenue
D. Fleischman, 134 Hudson avenue
Amos Fowler, 29 Second street
S. H. Freeman, 77 Columbia street
L. C. B. Graveline, 181 Madison ave
F. R. Greene, 626 Central avenue
Wm. Hailes, Jr., 197 Hamilton street
Edwin Haines, South Westerlo
Lorenzo Hale, 194 Clinton avenue
E. C. Hallenbeck, Bethlehem Center
J. M. Haskell, Bath-on-the-Hudson
J. U. Haynes, 76 Remsen st, Cohoes
James C. Healey, 65 South Ferry st
John V. Hennessy, 872 Broadway
D. W. Houston, Cohoes
Alfred B. Huested, State cor. Eagle st
Henry Hun, 33 Elk street
Thomas Hun, 33 Elk street
P. J. Keegan, 48 Clinton avenue
Albert W. Kilbourne, 792 Broadway
Uriah B. LaMoure, 90 Hudson ave
E. E. Larkin, 27 Eagle street
George G. Lempe, 57 Eagle street
Joseph Lewi, 94 Westerlo street
Maurice J. Lewi, 48 Eagle street
George E. Lyon, West Troy
W. C. Marselius, 28 Eagle street
Albert Marsh, 197 Lancaster street
J. P. Marsh, Green Island
John D. McAllister, Rose street
W. G. McDonald, 76 Hudson avenue
M. McHarg, 850 Madison avenue
H. McNaughton, 3 South Hawk street
H. E. Mereness, 184 State Street
C. S. Merrill, 23 Washington avenue
Howard Miller, 85 Jefferson street
J. H. Mitchell, Cohoes
Nelson Monroe, Green Island
C. H. Moore, 341 Hudson avenue
F. D. Morrill, 74 Westerlo street
Samuel R. Morrow, 29 South Hawk st
C. D. Mosher, 351 South Pearl street
Frank G. Mosher, Coeymans
George S. Munson, 30 Eagle street
P. M. Murphy, 66 Jay street
Wm. H. Murray, 269 Lark street
T. W. Nellis, 44 Eagle street
W. J. Nellis, 44 Eagle street
G. H. Newcomb, 94 Chestnut street
D. V. O'Leary, 69 South Ferry street
Howard S. Paine, 105 State street
G. W. Papen, 89 Schuyler street
G. Upton Peltier, Cohoes
T. Kirk Perry, 174 Second street
Samuel Peters, Cohoes
Charles H. Porter, 103 Lancaster st
W. L. Purple, 46 Second street
W. H. T. Reynolds, 70 S. Hawk street
Otto Ritzman, 66 Willett
J. W. Ross, Cohoes
Selwyn A. Russell, Lancaster street
William B. Sabin, West Troy
C. F. Scattergood, 10 Bleecker place
Wm. L. Schutter, 28 N. Knox street
C. E. Seger, Callanan's Corners
Seth G. Shanks, 547 Clinton avenue
J. V. Sheppy, 42 Hudson avenue
J. C. Shiland, West Troy
J. H. Skillicorn, 324 Hudson avenue
Chas. H. Smith, 246 Washington av
R. J. Smith, 88 Hudson avenue
Julius B. Southworth, 47 Eagle street
H. R. Starkweather, 234 Central ave
B. U. Steenberg, 1 Ten Broeck street
H. W. Steenberg, Green Island
W. O. Stillman, 287 State street
John Ben. Stonehouse, Albany
Anthony P. Ten Eyck, Defreestville
John Thompson, 5 Canal street
Franklin Townsend, Jr., 2 Park place
T. Markley Trego, 5 Ten Broeck street
Willis G. Tucker, College Building
G. L. Ullman, 70 Central avenue
T. F. C. Van Allen, 47 Eagle street
Albert VanderVeer, 28 Eagle street
E. VanSlyke, 320 South Pearl street
A. T. VanVranken, West Troy
S. B. Ward, 135 North Pearl street
Felix Weidman, Westerlo street

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T. H. Willard, Albany Post Office
L. B. Winne, 72 Livingston avenue
C. E. Witbeck, Cohoes
Harriet A. Woodward, 6 Kenmore pl
Number of Members, 136.

NOTE.—B. B. Fredenburg died August 8, 1888, æt. 91.
Thomas Helme died March 17, 1889, æt. 57.
Robert H. Sabin died December 4, 1888, æt. 56.
John Swinburne died March 28, 1889, æt. 69.

MEDICAL SOCIETY OF THE COUNTY OF ALLEGANY.

(Date of organization unknown.)

MEETINGS.—Annual, third Wednesday in June; quarterly, third Wednesday in September, December, and March.

Officers. (June 20, 1888.)

H. A. Place, President.
F. C. Davis, Vice-President.
A. E. Willard, Secretary and Treasurer.

Censors: W. W. Crandall, A. E. Willard, G. H. Witter, Otis Allen, H. P. Saunders.

Committee on Hygiene: A. E. Willard, J. W. Coller, F. C. Davis.

Delegate to State Medical Society: Otis Allen.

Members.

Otis Allen, Cuba
Seneca Allen, Cuba
J. W. Coller, Wellsville
A. W. Cottrell, Whitesville
W. W. Crandall, Andover
Dorr Cutler, Bolivar
J. L. Cutler, Bolivar
F. C. Davis, Angelica
C. C. Demmings, Friendship
S. W. Green, Wellsville
O. N. Latham, Bolivar
H. H. Lyman, Hume
G. C. McNett, Belmont
Stephen Maxson, Cuba
Benjamin Morton, Belmont
H. H. Nye, Wellsville
Charles W. O'Donnel, Andover
H. A. Place, Ceres
Charles W. Saunders, Belfast
H. P. Saunders, Alfred Center
Mark Sheppard, Alfred Center
William M. Smith, Angelica
O. T. Stacy, Rochester, Monroe Co
Roderick Stebbins, Friendship
T. S. Thomas, Black Creek
M. B. Titus, Allentown
Chas. J. Tucker, Batavia, Genesee Co
W. F. Wells, Rushford
A. E. Willard, Friendship
G. H. Witter, Wellsville
Number of Members, 30.

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MEDICAL SOCIETY OF THE COUNTY OF BROOME.

(Organized July 4, 1806.)

MEETINGS.—Annual, first Tuesday in October; quarterly, first Tuesday in January, April, and July.

Officers. (October, 1888.)

D. P. Jackson, President.
L. H. Hills, Vice-President.
D. S. Burr, Secretary.
E. H. Wells, Treasurer.

Censors: C. B. Richards, J. H. Chittenden, J. M. Farrington, B. E. Radeker, G. N. Hall.

Delegate to State Medical Society: F. W. Putnam.

Members.

(Where the name of the town is not given Binghamton is to be understood.)

S. P. Allen, Whitney's Point
J. D. Appley, Harpersville
William Bassett, 77 Carroll street
H. F. Beardsley, 500 Chenango street
J. W. Booth, West Colesville
D. S. Burr, 145 Court street
Martin Bullock, Chenango
William Butler, Maine
N. R. Barnes, 140 Oak street
W. A. Brooks, 119 Court street
A. E. Blair, Castle Creek
H. A. Carr, 223 Chenango street
J. H. Chittenden, 51 Main street
E. G. Crafts, Binghamton
J. F. Connelly, 5 Court street
J. C. Comstock, Henry and Canal sts
Dwight Dudley, Maine
H. T. Dunbar, Union
I. C. Edson, Windsor
C. C. Edwards, 32 Henry street
H. O. Ely, 62 Front street
J. M. Farrington, 11 Jay street
S. B. Foster, Union
L. D. Farnham, 42 Main street
F. L. Forker, 38 Fayette street
K. C. French, Lisle
E. Guy, Harpersville
C. W. Greene, Chenango Forks
L. Griffin, Court and Cedar streets
O. C. Hall, Whitney's Point
G. N. Hall, 108 Chenango street
S. H. Harrington, Chenango Forks
P. A. Hayes, Afton
E. P. Hines, Great Bend, Pa
L. H. Hills, 3 Dwight's Block
D. P. Jackson, 123 Front street
E. L. Johnson, 259 Chenango street
W. H. Knapp, 29 Myrtle avenue
F. D. Lamb, Halstead, Pa
E. Mulheron, 78 Front street
S. F. McFarland, 76 Front street
I. D. Meacham, Hammond Block
W. A. Moore, 157 Washington street
C. C. McCullough, Harpersville
J. G. Orton, Henry and Canal streets
A. J. Osborn, 77 Court street
G. E. Pierson, Kirkwood
F. W. Putnam, 206 S. Water street
E. A. Pierce, 259 Chenango street
J. F. Pratt, 148 Front street
C. B. Richards, 86 Front street
B. E. Radeker, Deposit
G. S. Redfield, Conklin Station
W. F. Race, 69 Court street
James Ross, 94 S. Water street
C. D. Rogers, 69 Washington street
Weller Roos, Chenango Forks
C. D. Spencer, 101 Court street
E. L. Spencer, Windsor
R. A. Seymour, Whitney's Point
F. E. Slater, North Oak street
A. F. Taylor, Castle Creek
E. L. Teed, Center Lisle
J. L. VanAlstyne, 100 Hawley street

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E. H. Wells, 36 Henry street
J. S. Whitney, Union
W. W. Whitney, Union
O. J. Wilsey, Binghamton
L. D. Witherill, Union
A. M. Williams, 57 Front street
W. H. Wilson, Whitney's Point.

Number of Members, 71.

MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS.

MEETINGS.—Annual, at Salamanca, the first Wednesday of June; quarterly, on the first Wednesdays of September, December, and March.

Officers. (June 6, 1888.)

O. A. Tompkins, President.
S. J. Spencer, Vice-President.
Lyman L. Deck, Secretary and Treasurer.

Censors: Thomas J. King, Fred. C. Beales, A. D. Lake.

Delegates to State Medical Society: S. Z. Fisher, V. A. Ellsworth.

Members.

Horace Babcock, Gowanda
C. H. Bartlett, Olean
F. H. Bartlett, Olean
Fred C. Beales, Salamanca
S. S. Bedient, Little Valley
M. C. Bissell, Limestone
F. B. Blair, Allegany
Ira J. Brownson, Hinsdale
E. J. Burlingame, Sandusky
J. P. Colegrove, Salamanca
S. B. Crandall, Randolph
C. O. Day, Salamanca
Lyman L. Deck, Salamanca
Elijah Dresser, East Otto
W. H. Dukeman, Olean
E. W. Dutcher, Allegany
John L. Eddy, Olean
V. A. Ellsworth, East Otto
F. D. Findlay, Franklinville
S. Z. Fisher, Little Valley
M. C. Mollett, Olean
M. C. Hawley, East Randolph
Wm. B. Johnston, Ellicottville
Sophia B. Jones, Cattaraugus
Clarence King, Machias
Thomas J. King, Machias
A. D. Lake, Perrysburg
George Lattin, Cattaraugus
S. B. McClure, Allegany
S. J. Mudge, Olean
S. V. Pool, Otto
J. Powers, Olean
R. F. Rowley, Portville
J. H. Sackrider, East Randolph
William Sage, Olean
Nelson Saunders, Randolph
Robert R. Seyse, Farmersville
Alfred W. Smallman, Ellicottville
H. D. Snover, Steamburg
S. J. Spencer, Ellicottville
E. S. Stewart, Ellicottville
Ransom Terry, Ischua
O. A. Tompkins, Randolph
Edward Torrey, Allegany
F. E. Tuttle, Leon
Henry Van Aernam, Franklinville
H. D. Walker, Franklinville
C. M. Walrath, Ellicottville
L. Whitney, Olean

Number of Members, 49.

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MEDICAL SOCIETY OF THE COUNTY OF CAYUGA.

(Organized August 7, 1806.)

MEETINGS.—Annual, second Thursday in June; semi-annual, second Thursday in December. Regular meetings the second Thursday in each month.

Officers. (June 14, 1888.)

John Gerin, President.
A. L. Hall, Vice-President.
G. W. Greene, Secretary and Treasurer.

Committee on Hygiene: William S. Cheeseman, C. F. MacDonald, E. S. Foreman.

Delegates to State Medical Society: Benjamin A. Fordyce, Amanda S. Hickey.

Members.

(Where no town is mentioned Auburn is to be understood.)

Charles Atwood, Moravia
E. P. Baker, Aurora
C. O. Baker, 65 Genesee street
F. H. Benedict, Weedsport
M. O. Bentley, Weedsport
N. D. Blood, 14 Elizabeth street
B. J. C. Buckland, Fleming
W. B. Carroll, Meridian
W. S. Cheeseman, 20 William st
O. C. Clark, Weedsport
H. H. Coleman, 161 Genesee street
M. P. Conway, Auburn
W. T. Cox, Moravia
J. P. Creveling, 22 South street
A. S. Cummings, Cayuga
Theodore Dimon, 10 William street
F. A. Dudley, Kings Ferry
George A. Edmonds, Moravia
B. A. Fordyce, Union Springs
E. S. Foreman, 55 Genesee street
C. A. Fisher, Victory
C. L. George, 155 Genesee street
John Gerin, 68 North street
C. A. Groot, Cato
Geo. W. Greene, 65 Owasco street
A. L. Hall, Fair Haven
F. M. Hamlin, 9 William street
W. A. Hoag, Sherwood
F. Hodgeman, Auburn
Mrs. Amanda S. Hickey, 28 South st.
J. H. Horton, Kelloggsville
Miss Sophia E. Howard, 28 South st.
B. K. Hoxie, 42 Elizabeth street
Frank Hoxie, Union Springs
J. M. Jenkins, 162 Genesee street
Mrs. Nettie E. Jenkins, 162 Genesee st.
Frank Kenyon, Scipio
Miss Mary Kenyon, Kings Ferry
Wm. R Laird, 98 Wall street
Leroy Lewis, 14 Washington street
W. O. Luce, 12 William street
F. E. Maine, Auburn
Miss Maria Morse, Auburn
C. F. MacDonald, State Asylum for Insane Criminals
F. H. Parker, 156 Genesee street
B. E. Osborn, Fulton street
Miss Susie G. Otis, Auburn
Frank Ryan, Kelloggsville
C. Sawyer, Auburn
A. D. Stewart, Port Byron
A. R. Sutherland, 39 Franklin street
J. M. Semple, Wall street
Fred Sefton, State Asylum for Insane Criminals
Sheldon Voorhees, 88 North street
Edmond C. Van Dusen, Cato
M. B. Van Buskirk, Genoa
D. A. White, Montezuma
George W. Whitney, Genesee street

Number of Members, 58.

NOTE.—Truman S. Brinkerhoff, of Auburn, died Sept. 13, 1888, æt. 56.

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MEDICAL SOCIETY OF THE COUNTY OF CHAUTAUQUA.

MEETINGS.—Annual, second Tuesday in July; semi-annual, second Tuesday in January.

Officers. (July 12, 1888.)

Edward Ames, President.
A. I. Waterhouse, Vice-President.
William H. Chace, Secretary and Treasurer.

Censors: H. J. Dean, T. D. Strong,

Delegates to State Medical Society: H. J. Dean, Edward Ames.

Members.

Edward Ames, Sherman
Mrs. Mary A. Armstrong, Jamestown
F. A. Beebe, Findley's Lake
W. M. Bemus, Jamestown
W. P. Bemus, Jamestown
M. N. Benjamin, Dunkirk
George E. Blackham, Dunkirk
E. E. Boyd, Ashville
H. J. Boyd, Watt's Flats
William Chace, Mayville
William H. Chace, Mayville
F. B. Darling, Westfield
H. J. Dean, Brocton
Albert de Bey, Clymer
Weldon A. Dickson, Jamestown
S. E. Ford, Clymer
H. H. Glidden, Panama
H. P. Hall, Jamestown
G. W. Hazeltine, Jamestown
Laban Hazeltine, Jamestown
Ed. R. Hopkins, Silver Creek
R. D. Kahle, Kennedy
J. J. Lenhart, Bemus Point
John C. Lewis, Panama
L. P. McCray, Clymer
J. M. McWharf, Dunkirk
G. D. Marsh, Sherman
MacDonald Moore, Fredonia
James Murphy, Sherman
N. G. Richmond, Fredonia
R. T. Rolph, Dunkirk
H. R. Rogers, Dunkirk
Artemas Ross, Clymer
O. C. Shaw, Kennedy
J. J. Sharp, Silver Creek
Aaron Skinner, Ashville
A. H. Smith, Fredonia
A. A. Stevens, Jr., Sinclairville
T. D. Strong, Westfield
J. J. Towle, Jamestown
P. A. Walling, Clymer
A. I. Waterhouse, Jamestown
C. H. Waterhouse, Jamestown
J. H. Wiggins, Jamestown
T. C. Wilson, Dewittville

Number of Members, 45.

NOTE.—S. M. Smith, of Dunkirk, died April 24, 1889, æt. 62.

MEDICAL SOCIETY OF THE COUNTY OF CHEMUNG.

(Organized May 6, 1836.)

MEETINGS.—Annual, third Tuesday in June; quarterly, in September, December, and March.

Officers. (June 19, 1888.)

T. A. Dundas, President.
N. S. Messenger, Vice-President.
John H. Price, Secretary.
C. L. Squire, Treasurer.

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Censors: H. Flood, T. H. Squire, H. D. Wey, C. W. M. Brown, F. W. Ross.

Delegate to State Medical Society: H. DeV. Pratt.

Members.

(Where no town is mentioned Elmira is to be understood.)

L. W. Bailey, Millport
George M. Beard, Millport
C. W. Brown, 412 W. Church street
C. W. M. Brown, 311 Baldwin street
R. P. Bush, Horseheads
Z. F. Chase, 760 East Church street
C. M. Colegrove, Wellsburg, N. Y.
W. E. Colegrove, Horseheads
E. H. Davis, East Church street
William H. Davis, Horseheads
T. A. Dundas, Baldwin street
John E. Eldred, 107 South Main st
Henry Flood, 403 Lake street
H. H. Ford, West Church Street
J. W. Gee, Van Ettenville
C. S. Gere, Chemung
Ebenezer Gere, Chemung
T. S. Up de Graff, 114 W. Chemung pl
Ira F. Hart, 306 East Church street
Ph. Heldrich, 272 Baldwin street
J. Stewart Hill, 151 Lake street
F. W. Huff, Wellsburg, N. Y.
J. Jacobs, cor. Gray and Baldwin sts
O. A. Jakeway, Breesport
A. E. Le Fevre, Erin
L. H. Merchant, 523 East Union st
G. V. R. Merrill, 458 Spaulding street
E. Merritt Hooper, West 2d street
N. Sanford Messenger, Breesport
J. Moroney, 328 Baldwin street
F. B. Parke, East Church street
Corbett Peebles, Big Flats
H. DeV. Pratt, Jr., 118 Main street
J. H. Price, 154 W. Fourth
D. A. Reardon, 354 South Main street
E. A. Reilly, 804 Lake street
Frank W. Ross, 251 Baldwin street
C. L. Squire, 409 East Church street
T. H. Squire, 409 East Church street
S. F. Stagg, 117 West Second street
A. D. Tewksbury, 207 West Water st
T. A. Wales, 403 William street
J. A. Westlake, 907 Lake street
M. S. Watkins, 432 Pennsylvania ave
Hamilton D. Wey, 359 Main street
William C. Wey, 359 Main street
Benj. F. White, Wellsburg
Charles Woodward, 205 Gray street
George H. Woodward, Big Flats

Number of Members, 49.

Non-Resident Members.

E. P. Allen, Athens, Pa.
Reuben R. Chilson, Bentley Creek, Pa.
J. H. Cole, Gillett, Pa.
W. D. Davison, Canton, Pa.
Edward Mills, Ulster, Pa.
P. B. Roper, Alpine, N. Y.
Charles Voorhees, Daggett's Farm, Penna.

MEDICAL SOCIETY OF THE COUNTY OF CHENANGO.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January 10, 1889.)

Byron J. Ormsby, President,
James B. Noyes, Vice-President.
Wm. H. Brownell, Secretary.
S. M. Hand, Treasurer.

Censors: (None elected.)

Delegate to State Medical Society: Leroy J. Brooks, D. A. Gleason (Alternate).

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Members.

L. C. Andrews, Pitcher
Jesse E. Bartoo, Greene
W. H. Beardsley, Coventry
H. H. Beecher, Norwich
Louis A. Blair, McDonough
L. J. Brooks, Norwich
Wm. H. Brownell, Utica
Vincent Burgess, Brisben
Alvin B. Church, Oneonta, Otsego Co.
R. M. Clark, Guilford
J. B. Cook, Afton
H. D. Copley, Bainbridge
H. E. Crowell, Rockdale
DeWitt C. Crumb, South Otselic
George Douglas, Oxford
Thomas Dwight, Preston
H. S. Dye, New Berlin
E. L. Ensign, Oxford
R. D. L. Evans, Bainbridge
H. S. Gardiner, Hamilton
S. C. Gibson, South New Berlin
D. A. Gleason, Oxford
J. D. Guy, Coventry
Horace Halbert, Canastota
S. M. Hand, Norwich
Blinn A. Harris, Norwich
P. A. Hayes, Afton
E. D. Hayward, Columbus
A. C. Hazard, New Berlin
J. U. Jacobs, Mt. Upton
J. T. Jameson, South Otselic
L. M. Johnson, Greene
Enice F. Lamb, Georgetown, Madison Co.
D. M. Lee, Oxford
J. V. Lewis, North Norwich
F. S. Lovell, South Otselic
E. S. Lyman, Sherburne
H. C. Lyman, Sherburne
S. F. McFarland, Binghamton
I. D. Meacham, Bainbridge
J. B. Noyes, New Berlin
B. J. Ormsby, Norwich
Thurston G. Packer, Smyrna
John F. Place, Bainbridge
C. M. Purdy, Norwich
L. J. Purdy, Smithville
W. G. Sands, Oxford
B. F. Smith, Mt. Upton
S. L. Smith, Smithville Flats
M. D. Spencer, Guilford
W. H. Stuart, Norwich
R. A. Thompson, Norwich
F. E. Thornton, South New Berlin
J. M. Thorp, Oxford
G. S. Weaver, McDonough
H. H. White, Earlville, Madison Co.
F. W. Whitney, Sherburne
G. W. Williams, Greene
M. M. Wood, Greene

Number of Members, 59.

NOTE.—George W. Avery died November 2, 1888, æt. 62.

MEDICAL SOCIETY OF THE COUNTY OF CLINTON.

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July.

Officers. (January 10, 1889.)

W. E. Clough, President.
J. G. McKinney, Vice-President.
E. M. Lyon, Secretary.
T. B. Nichols, Treasurer.

Committee on Hygiene: T. B. Nichols, D. S. Kellogg, E. M. Lyon.

Delegate to State Medical Society: D. S. Kellogg.

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Members.

Charles W. Arthur, Lyon Mountain
M. D. Breggs, Champlain
H. E. Center, Mooers
M. S. Carpenter, Clinton
Joel Chandler, Mooers
C. A. Church, Bloomingdale
W. E. Clough, West Chazy
L. C. Dodge, Rouse's Point
G. D. Dunham, Plattsburgh
J. F. Edgerly, Champlain
A. W. Fairbank, Chazy
J. M. Fulton, Beekmantown
Charles S. Haynes, Saranac
Samuel Haynes, Saranac
T. W. Haynes, LaColle, Prov. Quebec
O. A. Holcumb, Plattsburgh
W. S. Housinger, West Chazy
W. T. Housinger, West Chazy
E. S. Howe, Au Sable Forks
Romeo E. Hyde, Beekmantown
D. S. Kellogg, Plattsburgh
F. D. Kinsley, Peru
J. H. LaRocque, Plattsburgh
E. M. Lyon, Plattsburgh
J. G. McKinney, Schuyler Falls
Frank Madden, Plattsburgh
S. Mitchell, Jr., Saranac
A. E. Moody, Mooers
J. A. Nichols, New York
T. B. Nichols, Plattsburgh
J. B. Ransom, Altona
O. H. Riley, Mooers
E. A. Roberts, Ellenburgh
Hiram H. Rust, Ellenburgh
J. H. Smith, Dannemora
W. U. Taylor, Mooers
C. B. Vaughan, Morrisonville
D. B. Woodward, Ellenburgh
J. D. Woodwarth, Redfield

Number of Members, 39.

MEDICAL SOCIETY OF THE COUNTY OF COLUMBIA.

MEETINGS.—Annual, first Tuesday in October at City Hall, Hudson, N. Y.; semi-annual, first Tuesday in June at Chatham, N. Y.

Officers. (October 4, 1888.)

Crawford E. Fritts, President.
Wilmer I. Gordon, Vice-President.
Milford L. Bates, Secretary and Treasurer.

Censors: P. W. Shufelt, A. R. Van Deusen, E. H. Humphry, G. P. Salmon, C. E. Fritts.

Delegate to State Medical Society: Crawford E. Fritts.

Members.

J. H. Allen, Churchtown
Milford L. Bates, Canaan Four Corners
John C. Benham, Hudson
George E. Benson, Hudson
W. W. Betts, Valatie
John H. Cole, Claverack
Henry Cornell, Hillsdale
W. H. Crocker, Ancram
Crawford E. Fritts, Hudson
J. J. Glover, Stuyvesant Falls
Wilmer I. Gordon, Copake Iron Works
Wm. L. Holsapple, Hudson
Jacob Horton, Livingston
E. H. Humphry
Jordan W. Lockwood, Philmont
N. H. Mesick, Glencoe Mills
James A. Moors, Hudson
Robert H. Morey, Old Chatham
George A. Pierce, Lebanon Springs
W. B. Platner, Germantown
George P. K. Pomeroy, Stuyvesant
P. V. S. Pruyn, Kinderhook
George W. Rossman, Ancram
George P. Salmon, Hudson

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P. W. Shufelt, East Taghkanic
H. Lyle Smith, Hudson
Wm. O. Smith, Germantown
Wm. H. Stickles, Philmont
Wm. D. Swain, Copake
A. R. Van Deusen, Claverack
R. H. Vedder, Chatham Centre
I. C. Washburne, Chatham
H. G. Westlake, Hillsdale
J. T. Wheeler, Chatham
Thomas Wilson, Claverack
Richard A. Woodruff, Stottville
T. F. Woodworth, Kinderhook

Number of Members, 37.

Honorary Member.

Thomas Barton, Tivoli.

NOTE.—Died during the year: Wm. D. Mercer, Harlemville, and Edgar C. Niles, Philmont.

MEDICAL SOCIETY OF THE COUNTY OF CORTLAND.

(Organized August 10, 1808.)

MEETINGS.—Annual, second Thursday in June; semi-annual, second Thursday in December; quarterly, second Thursdays in September and March.

Officers. (June 14, 1888.)

George D. Bradford, President.
Jerome Angel, Vice-President.
F. W. Higgins, Secretary.
Caleb Green, Treasurer.
F. H. Green, Librarian.

Censors: Jerome Angel, H. C. Hendrick, W. J. Moore, D. C. Clark.

Committee on Hygiene: C. Green, H. C. Hendrick.

Delegate to State Medical Society: (None elected.)

Members.

Jerome Angel, Cortland
E. H. Barnes, Marathon
Charles E. Bennett, Cortland
George D. Bradford, Homer
Daniel W. Burdick, Homer
Dewitt C. Clark, Marathon
Henry T. Dana, Cortland
E. A. Didama, Cortland
H. Sheldon Edson, Cortland
Wm. Fitch, Dryden, Tompkins Co.
Caleb Green, Homer
Frank H. Green, Homer
M. L. Halbert, Cincinnatus
A. L. Head, Homer
H. C. Hendrick, McGrawville
Francis W. Higgins, Cortland
J. W. Hughes, Cortland
Herman D. Hunt, Preble
Miles G. Hyde, Cortland
Homer O. Jewett, Cortland
Edward M. McBirney, Willett
W. J. Moore, Cortland
Philip Neary, Union Valley
Judson C. Nelson, Truxton
A. D. Read, Marathon
Frank D. Reese, Cortland
R. Gibbons Smart, Marathon
Marcellus R. Smith, Cincinnatus
Dewey H. Stone, Homer
J. D. Tripp, Virgil
Sumner C. Webb, Homer
—— Weidman, Cuyler
A. J. White, Cortland

Number of Members, 33.

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MEDICAL SOCIETY OF THE COUNTY OF DELAWARE.

(Organized July 1, 1806.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in February.

Officers. (June 5, 1888.)

Thomas Wight, President.
R. R. Thompson, Vice-President.
J. R. Mathews, Secretary.
John Calhoun, Treasurer.

Censors: Thomas Wight, G. C. Smith, R. R. Thompson, H. A. Gates, J. N. Wright.

Delegate to State Medical Society: H. N. Buckley.

Members.

O. M. Allabeen, Margaretville
G. P. Bassett, Downsville
Howard Bell, Delhi
I. C. Bourne, Masonville
George H. Brinkman, Davenport
H. N. Buckley, Delhi
J. J. Buckley, Minnesota
O. Bunday, Deposit, Broome Co.
J. Calhoun, Delhi
S. S. Cartwright, Roxbury
S. E. Churchill, Stamford
John Clark, Delhi
Samuel A. Cottrell, Cannonsville
William H. Crawford, Andes
S. Decker, Griffin's Corners
Gilbert J. Dickson, Bovina
J. M. Donnelly, Davenport
T. M. Edwards, Iowa
E. W. Gallup, Stamford
H. A. Gates, Delhi
J. A. Gladstone, Andes
W. D. Heimer, Hamden
A. F. Lombard, Meredith
D. H. Mann, Brooklyn, N. Y.
J. R. Mathews, Bloomville
J. H. McLaren, Franklin
A. McLaury, Pleasant Valley, Dutchess Co.
J. S. McLaurey, New York, N. Y.
F. H. McNaught, Franklin
J. S. McNaught, Hobart
E. A. Miller, Meredith Hollow
John A. Montgomery, Downsville
J. Newkirk, Roxbury
Herbert L. Odell, Hobart
G. S. Olin, Meredith Hollow
Homer B. Palmer, Denver, Col.
S. C. Pettingill, Hancock
J. S. Robinson, Prattsville
Gilbert Scott, Davenport
George C. Smith, Delhi
H. M. Smith, New Jersey
E. E. Snow, Walton
A. E. Sullard, Franklin
R. R. Thompson, Delhi
Thomas Wight, Andes
J. N. Wright, Grand Gorge

Number of Members, 46.

MEDICAL SOCIETY OF THE COUNTY OF DUTCHESS.

(Organized in 1806.)

MEETINGS.—Annual, second Wednesday in January, at Poughkeepsie; semi-annual, second Wednesday in June.

Officers. (January, 1889.)

R. K. Tuthill, President.
H. C. Wilbur, Vice-President.
William Cramer, Secretary.
Charles H. Langdon, Treasurer.

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Censors: Alfred Hasbrouck, Robert K. Tuthill, E. H. Gerow.

Delegates to State Medical Society: W. J. Conklin, W. G. Stevenson.

Members.

B. N. Baker, Rhinebeck
Edwin Barnes, Pleasant Plains
T. J. Barton, Red Hook
J. S. Bird, Hyde Park
Edward C. Bolton, Poughkeepsie
R. J. Carroll, Red Hook
G. B. Chapman, Amenia Union
J. M. Cleveland, Poughkeepsie
G. H. Codding, Amenia
W. J. Conklin, Fishkill
H. L. Cookingham, Red Hook
Isaac M. Cornell, Wappinger's Falls
G. E. Coutant, Poughkeepsie
William Cramer, Poughkeepsie
Thomas K. Cruse, Wappinger's Falls
J. H. Doughty, Matteawan
H. K. DuBois, Bangall
D. W. DuMond, Millerton
A. T. Fink, Freedom Plains
Charles L. Fletcher, South Dover
Elizabeth H. Gerow, Poughkeepsie
J. Haidlauf, Poughkeepsie
T. Hammond, Dover Plains
Alfred Hasbrouck, Poughkeepsie
W. Herrick, Milan
A. F. Hoag, Millerton
W. H. Hopkins, Hyde Park.
George T. Howland, Tivoli
Edwin L. Hoyt, Shultzville
J. M. Hunting, Stanfordville
George Huntington, LaGrangeville
C. Hustis, Matteawan
J. M. Julian, Moore's Mill
J. Kinkead, Poughkeepsie
C. M. Kittredge, Fishkill-on-Hudson
D. A. Knapp, North Clove
J. H. LaGrange Glenham
J. T. C. Lamb, Poughkeepsie
Charles H. Langdon, Poughkeepsie
I. D. LeRoy, Pleasant Valley
W. B. Linsley, Pawling
E. Losee, Bangall
John E. Losee, Upper Red Hook
I. N. Mead, Amenia
J. D. Miller, Poughkeepsie
J. E. Moith, Fishkill
M. C. Northrup, McIntyre
Edward H. Parker, Poughkeepsie
J. C. Payne, Poughkeepsie
H. Pierce, Pawling
J. O. Pingry, Mill Brook
J. W. Poucher, Poughkeepsie
Horace R. Powell, Poughkeepsie
J. G. Porteous, Poughkeepsie
M. T. Pultz, Stanfordville
L. E. Rockwell, Amenia
D. W. Sheedy, Poughkeepsie
W. G. Stevenson, Poughkeepsie
S. Stillman, Millerton
G. L. Sutton, East Fishkill
C. H. Thompson, Fishkill
I. H. Traver, Pleasant Valley
C. H. Tripp, Clinton Corners
R. K. Tuthill, Poughkeepsie
A. Underhill, New Hackensack
George H. Van Wagner, Wappinger's Falls
R. C. Van Wyck, Hopewell Junction
D. B. Ward, Poughkeepsie
G. M. Wellman, Dover Plains
Howell White, Fishkill
H. C. Wilbur, Pine Plains
P. T. Williamson, Poughkeepsie
J. P. Wilson, Poughkeepsie
J. S. Wilson, Poughkeepsie
L. C. Wood, Wappinger's Falls
W. C. Wright, Matteawan
J. Young, Fishkill-on-Hudson

Number of Members, 77.

NOTE.—Dr. C. N. Campbell, of Poughkeepsie, and Dr. J. P. Schenck, of Matteawan, died during the year.

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Honorary Members.

R. Demming, Sharon, Conn.
H. Fountain, Yorktown, N. Y.
W. H. Helm, Sing Sing, N. Y.
Austin La Monte, Carmel, N. Y.
G. W. Murdock, Cold Spring, N. Y.
R. F. Weir, New York, N. Y.
N. W. Wheeler, Patterson, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF ERIE.

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January 10, 1889.)

R. L. Banta, President.
G. W. McPherson, Vice-President.
Wm. H. Thornton, Secretary.
Frank W. Abbott, Treasurer.
Joseph B. Samo, Librarian.

Censors: H. R. Hopkins, Edward Storck, Thomas Lothrop, P. W. Van Peyma, Henry Lapp.

Committee on Hygiene: A. H. Briggs, A. M. Barker, E. Storck, J. W. Keene.

Delegates to State Medical Society: F. W. Bartlett, F. S. Crego, E. H. Long, Roswell Park, A. E. Persons.

Members.

(Where no town is mentioned Buffalo is understood.)

F. W. Abbott, 223 Franklin street
George Abbott, Hamburgh
Thomas G. Allen, 227 Pearl street
J. B. Andrews, State Insane Asylum, Forest avenue
J. S. Armstrong, 414 Main street
D. A. Bailey, 1227 Niagara street
Edward H. Ballou, Gardenville
R. L. Banta, 358 S. Division street
Westervelt Banta, Buffalo
A. M. Barker, 137 W. Tupper street
Edwin R. Barnes, 406 Main street
W. C. Barrett, 11 W. Chippewa st.
T. L. Barry, Spring Brook
F. W. Bartlett, 523 Delaware street
Bernard Bartow, 220 Franklin street
Herman Bauer, Genesee street
W. D. Bidman, 208 Vernon street
H. H. Bingham, —— Main street
E. S. Bissell, Main st., Buffalo Plains
John Boardman, 16 Court street
H. W. Bode, 393 Genesee street
L. E. Boies, Orchard Park
C. W. Bourne, Hamburgh
F. E. L. Brecht, 253 William street
A. H. Briggs, 262 Hudson avenue
A. J. Brooks, Marilla
Mark N. Brooks, Springville
G. L. Brown, 173 Niagara street
Ira C. Brown, Buffalo
E. N. Brush, Utica, N. Y.
C. F. Bruso, Buffalo
George N. Burwell, 130 Pearl street
Henry C. Buswell, Buffalo
Wm. C. Callanan, corner Pearl and Seneca streets
F. R. Campbell, 31 Franklin street
R. E. Campbell, 190 Niagara street
Louis Carmer, Williamsville
Charles Carey, 210 Delaware street
C. G. Champlin, 1872 Niagara street
Edward Clark, 241 Swan street
J. B. Coakley, 339 Delaware street
B. W. Cornwell, 100 High street
George F. Cott, Buffalo
A. H. Crawford, 274 Swan street
Floyd S. Crego, 141 Delaware avenue
John Cronyn, 55 W. Swan street

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J. L. C. Cronyn, 55 W. Swan street
Thomas W. Crowe, 777 Elk street
Rev. George W. Cutter, Buffalo
A. Dagenais, 348 E. Eagle street
B. H. Daggett, 49 S. Division street
J. Dambach, 417 Michigan street
C. M. Daniels, 1868 Main street
C. L. Dayton, Fargo avenue
D. Devening, 470 Michigan street
Conrad Diehl, 32 W. Genesee street
E. T. Dorland, 86 N. Division street
S. G. Dorr, 272 Jefferson street
Thomas F. Dwyer, — West avenue
W. C. Earl, 1541 Niagara street
C. D. Eisbein, 349 Broadway
H. S. Elwood, 9 W. Mohawk street
George E. Fell, 72 Niagara street
John D. Flagg, Buffalo
M. B. Folwell, 713 Delaware avenue
Joseph Fowler, 31 Church street
Jacob Frank, 234 N. Division street
C. C. Frederick, 64 Richmond ave.
Edward L. Gager, 367 Pearl street
W. H. Gail, E. Aurora
Jacob Goldberg, Union street
J. N. Goltha, Buffalo
W. D. Granger, State Insane Asylum, Forest avenue
S. S. Green, 384 Swan street
Dewitt C. Greene, 124 E. Swan st.
J. C. Greene, 124 E. Swan street
W. D. Greene, 444 Elk street
Willis G. Gregory, 931 Main street
J. W. Grosvenor, 393 Porter avenue
B. H. Grove, 396 Pearl street
Carl H. Guess, 31 Lake street
A. G. Gumaer, William Street
J. Haberstro, cor. High and Oak sts.
A. S. Hancock, 108 Seventh street
D. W. Harrington, 1430 Main street
M. Hartwig, 38 E. Huron street
L. F. Harvey, 16 W. Tupper street
J. Hauenstein, 499 Washington st.
Wm. B. Hawkins, 213 Franklin st.
H. E. Hayd, 9 Niagara street
R. Hebenstreit, 430 Broadway
Andrew F. Helwig, Swormville
H. G. Hill, Buffalo
J. D. Hill, 190 Delaware street
F. W. Hinkel, Pearl street
Wm. A. Hoddick, Prospect avenue
J. A. Hoffmeyer, 1872 Niagara st.
H. R. Hopkins, 433 Franklin street
C. F. Howard, 1458 Main street
L. Howe, 64 West Huron street
S. Y. Howell, 164 Franklin street
Burt P. Hoyer, 213 Main street
F. F. Hoyer, Tonawanda
Alvin A. Hubbell, 212 Franklin street
J. W. S. Hunter, Pierce's Hotel
A. W. Hurd, State Insane Asylum
H. D. Ingraham, 405 Franklin st.
W. E. Jennings, Hamburgh
Carlton J. Jewett, 158 Swan street
W. H. Jackson, Springville
T. M. Johnson, 309 Main street
E. E. Johnstone, ——
A. Kamerling, 171 Bryant street
J. W. Keene, 153 S. Division street
N. F. Kiefer, Spruce street
J. E. King, 16 E. Seneca street
L. Krombein, 246 Elm street
Julius Krug, 556 Broadway
Henry Lapp, Clarence
Edward Little, 186 Main street
B. G. Long, 1430 Main street
Eli H. Long, 1339 Main street
B. L. Lothrop, 81 Breckenridge st.
Thos. Lothrop, 260 Pearl street
U. C. Lynde, 183 Swan street
Wm. A. McFarlane, Springville
G. F. Mackay, 47 W. Swan street
G. W. McPherson, Lancaster
M. D. Mann, 610 Main street
J. I. Marcley, 45 W. Huron street
J. G. Meidenbauer, Erie Co. Alms House
W. Meisburger, 18 W. Genesee st.
Herbert Mickle, 159 S. Division st.
J. G. Miller, Lancaster
R. E. Miller, 783 Tupper street
W. V. Miller, Prospect avenue, cor. Vermont street
Mary B. Moody, 187 N. Pearl street
D. A. Morrison, ——

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E. J. Murphy, 406 Louisiana street
H. B. Murray, Tonawanda
W. D. Murray, Tonawanda
H. Mynter, 195 Franklin street
H. Nichell, 80 Sycamore street
C. J. Niemand, Michigan street
Edwin H. Norton, 179 Franklin st.
S. E. S. H. Nott, Hamburgh
E. C. W. O'Brien, 98 Swan street
W. J. Packwood, 406 E. Genesee st.
George S. Palmer, 182 Main street
Roswell Park, 510 Delaware street
L. P. L. Parker, Akron
J. C. Parmenter, 128 Seventh street
G. W. Pattison, 17 Court street
A. E. Persons, 108 William street
F. Peterson, Poughkeepsie, N. Y.
J. A. Pettit, Swan street
W. C. Phelps, 15 Allen street
John T. Pitkin, 617 Main street
Gustav Pohl, 394 Hickory street
J. Pohlman, Society of Natural Sciences, Buffalo
J. C. Porter, Ash st. cor. Broadway
Bina A. Potter, 182 Allen street
F. H. Potter, 42 W. Tupper street
J. H. Potter, Buffalo
Samuel Potter, Lancaster
W. W. Potter, 284 Franklin street
A. Prince, Oakfield, Genesee Co.
J. B. Pride, Alden
John H. Pryor, 327 Franklin street
James W. Putnam, 130 Pearl street
F. M. Rich, 284 Richmond avenue
Charles A. Ring, County Almshouse
W. G. Ring, 364 Niagara street
W. E. Robbins, Hamburgh
De L. Rochester, 216 Franklin st.
R. M. Root, Lovejoy street
Mary E. Runner, Eagle street
J. B. Samo, 396 Pearl street
Louis Schade, 244 Goodell street
O. C. Shaw, Hamburgh
T. G. Sheehan, Elk cor. Louisiana st.
W. H. Slacer, 190 Dearborn st.
Ed. T. Smith, 311 Connecticut street
E. T. Smith, 189 Fourteenth street
James S. Smith, 66 High street
Irving M. Snow, Buffalo
J. M. Stanley, 300 Michigan street
Elmer Starr, 64 W. Huron street
C. G. Steele, W. Genesee street
C. G. Stockton, 371 Porter avenue
E. Storck, 20 Huron street
E. E. Storck, 510 William street
O. C. Strong, Colden
P. H. Strong, 120 Niagara street
A. R. Sutherland, Tonawanda
G. Sweetland, Evans
Fadline Thoma, Buffalo
Justin G. Thompson, Angola
W. H. Thornton, 570 Niagara street
E. Tobie, 12 E. Mohawk street
H. P. Trull, Williamsville
F. V. Vandenberg, Univ. of Buffalo
Wm. Van Pelt, Williamsville
J. W. Van Peyma, Lancaster
P. W. Van Peyma, 445 William st.
W. Van Peyma, Clarence Center
F. O. Vaughn, 438 Swan street
L. C. Volker, 443 E. Genesee street
E. C. Waldurff, 188 Main street
Charles A. Wall, 391 Hudson street
J. J. Walsh, 259 Broadway
S. H. Warren, 119 Swan street
Charles Weill, 561 E. Genesee street
J. Wenz, Lancaster
G. H. Westinghouse, 313 Fargo ave.
G. M. Wetherill, 5 W. Chippewa st.
Mrs. S. W. Wetmore, 149 Franklin st.
S. W. Wetmore, 149 Franklin street
C. H. Wetzell, 561 E. Genesee street
J. G. Wheeler, Marilla
Electa B. Whipple, Buffalo
H. G. Whitnall, 848 Niagara street
A. B. Wilson, Virginia street
R. A. Witthaus, 137 W. Huron street
Phœbe Willet, Orchard Park
M. Willoughby, 1335 Main street
H. A. Wood, State Insane Asylum
C. C. Wyckoff, 482 Delaware street
G. W. York, 115 Franklin street

Number of Members, 228.

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MEDICAL SOCIETY OF THE COUNTY OF ESSEX.

MEETINGS.—Annual, fourth Tuesday in June, at Elizabethtown. Other meetings at such time and place as the Society may direct.

Officers. (June 26, 1888.)

M. J. La Bell, President.
H. W. Rand, Vice-President.
Frank T. De Lano, Secretary.
E. T. Strong, Treasurer.

Censors: S. E. Hale, E. F. Edgerly, M. H. Turner.

Delegate to State Medical Society: E. T. Strong.

Members.

Lyman Barton, Willsborough
Benjamin W. Burland, Mineville
Edgar S. Bullis, Schroon Lake
F. J. D'Avignon, AuSable Forks
Frank T. De Lano, Westport
S. F. Dickinson, National City, Cal.
Sidney W. Dodge, Franklin Falls
Edward F. Edgerly, Mineville
A. C. Grover, Port Henry
Safford E. Hale, Elizabethtown
Edwin S. Howe, Black Brook
Martin J. La Bell, Lewis
Albinus J. Merrill, Upper Jay
Joseph B. Murray, Crown Point
John N. Oliver, Burlington, Vt.
Dudley Palmer, Schroon
Warren E. Pattison, Westport
Abiathar Pollard, Westport
Hannibal W. Rand, Keene
R. T. Saville, Malone, Franklin Co.
Conant Sawyer, Auburn
Edward T. Strong, Elizabethtown
Frank E. Sweatt, Essex
Melvin H. Turner, Hammondsville
Charles B. Warner, Port Henry
Joseph Warner, Crown Point
Rolin C. Wilcox, Ticonderoga
George E. Whipple, Olmsteadville

Number of Members, 28.

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN.

(Organized in 1814; reorganized in 1848.)

MEETINGS.—Annual, first Tuesday in January; semi-annual, first Tuesday in June; quarterly, first Tuesday in September.

Officers. (January, 1889.)

J. L. Van Vechten, President.
George L. Jordan, Vice-President.
Sidney P. Bates, Secretary and Treasurer.
Robert J. Wilding, Assistant Secretary.

Censors: Theodore Gay, F. F. Grey, Calvin Skinner.

Delegate to State Medical Society: George H. Oliver.

Members.

W. A. Atwater, S. Regis Falls
Sidney P. Bates, Malone
L. M. Berry, Westville
Warren M. Brand, Burke
B. Bigelow, Malone
John H. Cameron, Malone
Carter Crippen, Trout River
Ira A. Darling, West Bangor

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Hiel S. Farnsworth, Chateaugay
Henry Furness, Malone
Theodore Gay, Malone
William Gillis, Fort Covington
J. A. Grant, Malone
F. F. Gray, Chateaugay
Watson H. Harwood, Malone
L. E. Hawkins, Brushton
George Howe, Chateaugay
I. A. Johnson, Chateaugay Lake
George L. Jordan, Burke
E. La Rocque, Malone
C. McConnell, Hogansburgh
James Macfie, Fort Covington
George H. Oliver, Dickinson Center
C. E. Pearl, North Bangor
J. S. Phillips, Malone
E. A. Rust, Moira
Calvin Skinner, Malone
J. A. Smart, Fort Covington
C. B. Smith, West Bangor
A. R. Taylor, Malone
E. E. Thurber, East Constable
J. L. Van Vechten, Chateaugay
L. M. Wardner, St. Regis Falls
Arthur A. Wilbur, East Constable
Robert J. Wilding, Malone
Daniel B. Woodward, Ellenburgh, Clinton Co.

Number of Members, 36.

MEDICAL SOCIETY OF THE COUNTY OF FULTON.

MEETINGS.—Annual, second Thursday in January; quarterly, second Thursday in April; semi-annual, second Thursday in July, at such place as is agreed upon.

Officers. (January, 1889.)

D. V. Still, President.
M. F. Drury, Vice-President.
P. R. Furbeck, Secretary.
Isaac DeZouche, Treasurer.

Censors: E. Beach, J. Edwards, R. H. Cameron.
Committee on Hygiene: P. R. Furbeck, I. DeZouche, F. Beebe.
Delegate to State Medical Society: D. S. Orton.

Members.

D. N. Barker, Northville
Eugene Beach, Gloversville
Frank Beebe, Johnstown
J. F. Blake, Northville
John E. Burdick, Johnstown
Richard H. Cameron, Johnstown
C. F. Clowe, Kingsboro
E. H. Coon, Mayfield
William Davis, Gloversville
Isaac DeZouche, Gloversville
M. F. Drury, Broadalbin
John Edwards, Gloversville
H. C. Finch, Broadalbin
Peter R. Furbeck, Gloversville
A. L. Johnson, Gloversville
W. L. Johnson, Johnstown
C. M. Lefler, Gloversville
Jehiel Lefler, Johnstown
Darius S. Orton, Northampton
R. Palmer, Gloversville
J. S. Phillips, Gloversville
F. W. Shaffer, Gloversville
T. D. Smith, Broadalbin
David V. Still, Johnstown
J. K. Thorne, Gloversville
James K. Young, Johnstown

Number of Members, 26.

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MEDICAL SOCIETY OF THE COUNTY OF GENESEE.

(Organized about 1811.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in January, at Batavia.

Officers. (June 10, 1884.)[1]

J. F. Cleveland, President.
Wm. B. Sprague, Vice-President.
E. C. Smith, Secretary and Treasurer.

Censors: Wm. B. Sprague, Henry Pamphilon, A. P. Jackson, I. V. Mullen, H. A. Morse.

Delegate to State Medical Society: A. P. Jackson.

Members.

S. Barrett, Le Roy
S. C. Bateman, Alabama
W. T. Bolton, Batavia
J. F. Cleveland, Le Roy
F. W. Crane, Corfu
G. W. Croff, Bethany
O. R. Croff, Bethany
A. G. Ellenwood, Attica, Wyom'g Co.
B. A. Fuller, Le Roy
G. B. Gilbert, Byron
A. P. Jackson, Oakfield
J. M. Lewis, Elba
H. A. Morse, Batavia
I. T. Mullen, Stafford
I. V. Mullen, Alexander
John H. Mullen, Alexander
Wm. Pardee, Oakfield
L. B. Parmele, Batavia
C. F. Rand, Batavia
A. D. Smith, East Pembroke
E. C. Smith, Corfu
Wm. B. Sprague, Pavilion
M. W. Townsend, Bergen
L. L. Tozier, Batavia
I. W. Warner, Elba
R. Williams, Le Roy
A. F. G. Zarhout, Alabama

Number of Members, 27.

MEDICAL SOCIETY OF THE COUNTY OF GREENE.

(Organized July, 1806; reorganized October 13, 1855.)

MEETINGS.—Annual, second Tuesday in May; semi-annual, second Tuesday in October; quarterly, second Tuesday in July and January.

Officers. (May 8, 1888.)

P. J. Stanley, President.
Charles P. McCabe, Vice-President.
Sherwood A. Holcomb, Secretary.
William B. Huestis, Treasurer.

Censors: I. J. Van Hoesen, C. H. Chubb, George Hauer, C. E. Willard, W. B. Snow.

Committee on Hygiene: B. S. McCabe. C. H. Chubb, W. B. Snow.

Delegate to State Medical Society: C. P. McCabe.

Members.

C. V. Barnett, Coxsackie
Ambrose Beach, Coxsackie
Charles H. Chubb, Palenville
George Conklin, Durham

[1] No meeting of the Society since this date.

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Jonathan B. Cowles, Durham
James A. Dean, Catskill
Nelson Fanning, Catskill
Nelson Fanning, Jr., Leeds
Thomas Fitch, Prattsville
Edwin L. Ford, Lexington
F. S. Greene, Coxsackie
Henry J. Griffin, Cairo
N. H. Griffin, Cairo
George Hauer, Tannersville
Wm. B. Huestis, Kiskatom
S. A. Holcomb, Hensonville
Bradley S. McCabe, Greenville
Charles P. McCabe, Greenville
Wm. P. McLaury, Catskill
E. R. Mackey, Catskill
Wm. H. Mead, Windham
C. A. Munn, Prattsville
George H. Noble, Cairo
John D. Robinson, Prattsville
J. B. Rouse, Leeds
L. Safford, East Durham
Samuel T. Searles, New Baltimore
H. M. Simons, Oak Hill
William B. Snow, Ashland
P. J. Stanley, Windham
I. J. Van Hoesen, Medway
A. W. Van Slyke, Coxsackie
G. W. Van Tassel, Freehold
W. A. Wasson, Greenville
F. A. Wheeler, Athens
J. H. Wheeler, Athens
Charles E. Willard, Catskill

Number of Members, 37.

Honorary Member: Gouverneur M. Smith, of New York.

HAMILTON COUNTY.

(Has no Medical Society.)

MEDICAL SOCIETY OF THE COUNTY OF HERKIMER.

(Organized August 5, 1808.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in December.

Officers. (June 5, 1888.)

P. A. Skiff, President.
John B. Ellis, Vice-President.
A. Walter Suiter, Secretary.
George Graves, Treasurer.

Censors: M. A. Southworth, S. S. Richards, Eli Fox, I. O. Nellis, D. M. Devendorf.

Committee on Hygiene: C. W. Hamlin, Chairman, E. M. Draper, E. S. Willard, K. A. Bushnell, A. Walter Suiter.

Delegate to State Medical Society: C. W. Hamlin.

Members.

Wm. Brown, Cedarville
W. W. Budlong, Frankfort
Benj. E. Bushnell, Little Falls
K. A. Bushnell, Little Falls
J. E. Casey, Mohawk
H. J. Christman, Columbia
Fred F. Comstock, Ilion
D. M. Devendorf, Herkimer
Lyman C. Dexter, Newport
A. J. Douglass, Ilion
A. O. Douglass, Little Falls
E. M. Draper, Ilion
Wm. H. Dudley, Newport
I. S. Edsall, Middleville

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John B. Ellis, Little Falls
Eli Fox, Mohawk
George Graves, Herkimer
Wm. D. Garlock, Little Falls
Charles H. Glidden, Little Falls
H. H. Greene, Paine's Hollow
C. W. Hamlin, Middleville
Wm. H. Harter, Herkimer
I. B. Holcomb, Newport
James F. Huntley, West Winfield
Stephen A. Ingham, Little Falls
Cyrus Kay, Jr., Herkimer
G. N. Lehr, Frankfort
Miles Longshore, Cold Brook
Adam Miller, Jordanville
W. B. Miller, Salisbury Center
S. R. Millington, Poland
A. A. Moors, West Winfield
Irving O. Nellis, Herkimer
Wm. H. H. Parkhurst, Frankfort
Vaughn C. Potter, Starkville
Peter Pryne, Herkimer
George P. Rasbach, Mohawk
James I. Rasbach, Ilion
S. S. Richards, Frankfort
James M. Rose, West Winfield
John P. Sharer, Little Falls
P. A. Skiff, Frankfort
Malek A. Southworth, Little Falls
John H. Stevens, Cedarville
A. Walter Suiter, Herkimer
Edgar C. Swift, Jordanville
William Tibbits, Newville
D. P. VanCourt, Mohawk
D. N. Walker, Ilion
Robert W. Warner, Ilion
Edward S. Willard, Fairfield
Wm. B. Woodhull, Poland
John D. Young, Starkville.

Number of Members, 53.

NOTE.—Dr. H. G. Barney, Dolgeville, died Sept. 2, 1888, æt. 55 years.

MEDICAL SOCIETY OF THE COUNTY OF JEFFERSON.

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in December; quarterly, second Tuesday in March and September.

Officers. (June 12, 1888.)

J. P. Spencer, President.
Charles Douglass, Vice-President.
F. M. Shepard, Secretary.
C. M. Rexford, Treasurer.

Censors: J. M. Crawe, D. C. Rodenhurst, Geo. G. Sabin, H. G. P. Spencer, M. L. Smith.

Delegates to State Medical Society: H. H. Deane, W. A. Vincent.

Members.

I. H. Abell, Antwerp
F. C. Bailey, Adams Center
W. C. Bailey, Adams Center
H. D. Bingle, Carthage
G. A. R. Blake, Watertown
E. A. Chapman, Belleville
B. C. Cheeseman, Depauville
Robert Clink, Redwood
J. M. Crawe, Watertown
J. M. Crawe, Jr., Watertown
F. T. Dale, Lafargeville
George H. Davis, Black River
H. H. Deane, Watertown
Charles Douglass, Dexter
C. S. Drury, Natural Bridge
O. C. Eastman, Watertown
W. A. Forrester, Black River
S. W. Frame, Belleville
A. A. Getman, Chaumont
L. G. Gifford, Rodman

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J. C. Graham, Philadelphia, N. Y.
M. J. Hutchins, Redwood
H. W. Jewett, Chaumont
Edward F. Johnson, Champion
P. H. Johnson, Adams
C. L. Jones, Lafargeville
L. E. Jones, Evans' Mills
James E. Kelsey, Theresa
A. S. Low, Watertown
J. B. Low
H. A. McIllmoyl, Clayton
George M. McCombs, Clayton
Mrs. Lois Mansfield, Watertown
L. Mason, Evans' Mills
F. W. H. Massey, Brownville
Charles Parker, Three Mile Bay
Kate Parker, Watertown
John Pierce, Adams
Frank R. Porter, Sackett's Harbor
C. M. Rexford, Watertown
DeWitt C. Rodenhurst, Phila. N. Y.
George G. Sabin, Black River
F. M. Shepard, Watertown
W. H. H. Sias, Ellis Village
E. Sill, Watertown
Allen S. Smith, Watertown
F. B. Smith, Watertown
M. L. Smith, Watertown
Gordon P. Spencer, Watertown
H. G. P. Spencer, Watertown
James D. Spencer, Watertown
A. B. Stevens, Watertown
C. G. Stevens, Watertown
J. R. Sturtevant, Theresa
W. G. Terry, Henderson
A. S. Thompson, Ellis Village
J. H. Thompson, Fisher's Landing
E. W. Trowbridge, Watertown
Wm. E. Tyler, Sackett's Harbor
W. A. Vincent, Three Mile Bay
E. E. Ward, Pamelia Four Corners
Lewis C. Watson, Alexandria
J. A. Wood, Plessis

Number of Members, 63.

NOTE.—E. S. Carlisle, Omar, died March 5, 1889, æt. 72 years.

MEDICAL SOCIETY OF THE COUNTY OF KINGS.

MEETINGS.—This Society holds its annual meeting on the third Tuesday in January; stated meetings on the third Tuesday of other months. All meetings are held in Brooklyn, at 356 Bridge Street, which has been purchased and refitted, during the past year, for the permanent home of this Society.

In the list of members given below, only those are included who conform with the requirements of the By-laws in respect to assessments and dues. A "Journal and Reading Room" is open daily (except Sundays) from 10 A.M. to 10 P.M.; over two hundred journals are regularly on file. The library has recently been improved by the addition of several valuable works of reference, and the best of the new medical monographs and text-books.

Officers.

A. Ross Matheson, President.
Isaac H. Barber, Vice-President.
W. M. Hutchinson, Secretary.
David Myerle, Assistant Secretary.
Walter B. Chase, Treasurer.
Joseph H. Hunt, Librarian.

Censors: Joel W. Hyde, J. C. Shaw, Ernest Palmer,
Wm. Maddren, Gordon R. Hall.

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Trustees: Wm. Wallace, Chas. Jewett, Alex. Hutchins, Jos. H. Hunt, A. J. C. Skene.

Delegates to State Medical Society.

(Where the name of the town is not given Brooklyn is to be understood.)

Fred. D. Bailey,
H. L. Bartlett,
Charles N. Cox,
Chas. E. De La Vergne,
R. L. Dickenson.
Geo. A. Evans,
Geo. R. Fowler,
Sidney Allen Fox,
Wm. Maddren,
L. S. Pilcher,
Frank E. West,
B. F. Westbrook.

Members.

L. M. Allen, Canarsie, L. I.
Stanton Allen, 114 Montague street
William Anderson, 527 Henry street
John A. Arnold, King's County Hospital, Flatbush
J. G. Atkinson, 257 Adelphi street
Benj. Ayres, 213 Jefferson ave
Fred. D. Bailey, Madison street cor. Nostrand ave
Frank Baldwin, 138 Summer ave
A. Neilson Baldwin, Vernon ave, Flatbush
I. H. Barber, 36 Lafayette ave
G. R. Barnes, 170 Hull street
H. L. Bartlett, Flatbush
E. H. Bartley, 21 Lafayette ave
H. B. Bayles, 442 9th street
C. D. Beasley, 460 Marcy ave
W. N. Belcher, 25 S. Portland ave
L. T. Bell, 711 Bedford ave
Charles N. Bellows, 442 Nostrand av
Hermann Bender, 849 Willoughby av
W. H. Bennett, 188 6th ave
James R. Bird, 122 Putnam ave
J. B. Blake, 194 Putnam ave
H. D. Bliss, 23 Halsey street
W. A. Bliss, 218 11th street
D. G. Bodkin, 92 Sands street
J. B. Bogart, 225 Greene ave
Seth D. Boggs, 341 Tompkins cor. Monroe street
F. W. Bowron, 259 Tompkins ave
W. J. Brandth, 405 Union street
B. M. Briggs, 106 Willoughby street
A. T. Bristow 234 Clinton street
Anna M. Brown, 982 Bedford ave
D. R. Brown, 392 Clinton street
Wm. Browning, 54 Lefferts place
Wm. W. Browning, 155 Reid ave
A. C. Brush, 244 Carlton ave
Geo. W. Brush, 2 Spencer place
Emilie Buchaca, 526 Macon street
A. H. Buckmaster, 164 Clinton street
E. S. Bunker, 117 St. John's place
Benj. Burroughs, ——
Glen. R. Butler, 402 Tompkins ave
J. H. H. Burge, 132 Montague street
John Byrne, 314 Clinton street
P. Candidus, 228 S. 9th street, E. D.
Chas. C. Canfield, 118 Hart street
James L. Carney, 44 4th ave
E. J. Carolan, 856 Bedford ave
A. F. Carroll, 344 Jay street
N. M. Carter, 499 Washington ave
A. W. Catlin, 207 Greene street
Walter B. Chase, 645 Marcy ave
S. B. Childs, 498 Classon ave
S. Church, 236 Clinton street
Frank H. Clark, 527 Marcy ave
Joseph E. Clark, 340 Clinton street
Alex. Cochran, 212 Clinton street
H. L. Cochran, 141 Clinton street
J. A. Cochran, 212 Clinton street
F. H. Colton, 136 Montague street
Henry Conkling, 143 Remsen street
J. T. Conkling, 143 Remsen street
C. D. Cook, 133 Pacific street

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W. J. Corcoran, 301 Clinton street
Chas. Corey, 23 S. Oxford street
W. L. Cory, ——
J. H. Coverley, 191 Washington park
Chas. N. Cox, 489 Greene ave
L. F. Criado, 147 Fort Greene place
E. P. Crowell, 69 Decatur street
Wm. J. Cruikshank, 9 Lafayette ave
Albert M. Curry, 493 Classon ave
G. W. Cushing, 221 Schermerhorn st
G. R. Cutter, 473 Bedford ave
E. A. Day, 306 Summer ave
C. E. De La Vergne, 184 Clinton st
W. A. De Long, 285 S. 2d st, E. D.
F. C. De Mund, New Utrecht
J. Del Risco, 226 Washington ave
R. S. Dickenson, 169 Clinton street
H. P. Dome, 1408
Charles E. Dority, 411 Union ave
A. J. Dower, 380 Union street
James Downie, 1008 Halsey street
J. H. Droge, 8 Stuyvesant ave
G. Drury, 115 Johnson street
Josephine A. Dupre, Oakland, Cal.
Louis M. Dusseldorf, 251 Hoyt st
J. E. Dusseldorf, 620 Carroll street
R. G. Eccles, 191 Dean street
Benj. Edson, 83 St. Mark's ave
Edgar Eltinge, 2 Verona place
Z. T. Emery, 410 Washington ave
Maurice Enright, 54 Union av, E. D.
Geo. A. Evans, 909 Bedford ave
H. A. Fairbairn, 213 McDonough st
J. N. Farrar, 1271 Broadway, N. Y.
Mary A. W. Faunce, 74 Cumberland street
Herbert Fearn, 196 Clermont ave
Geo. N. Ferris, Flatbush av, Flatbush
B. F. Fessenden, 380 Adelphia street
M. Figuera, 12 Stuyvesant ave
Chas. S. Fischer, 44th st near 3d ave
J. W. Fleming, 379 Bedford ave
Leon M. Fleming, 195 Adams street
C. B. Fowler, 316 10th street
G. R. Fowler, 302 Washington ave
Sidney A. Fox, 22 Cambridge place
T. R. French, 469 Clinton ave
T. Frickenstein, 110 Union av, E. D.
J. Fulis, 237 Hewes street, E. D.
Frances V. C. Fuller, 110 St. James' pl
S. E. Fuller, 77 Hanson place
H. S. Gilbert, 311 Cumberland street
C. P. Gildersleeve, 169 State street
Wm. Gilfillan, 98 Remsen street
Wm. J. Gilfillan, 79 Main street
F. B. Gillette, 195 Calyer st, E. D.
Thos. C. Giroux, 142 S. 4th st, E. D.
J. J. Gleavy, 287 9th street, S. B.
O. A. Gordon, 166 Tompkins ave
Eliot Gorton, Morris Plains, N. J.
L. C. Gray, 158 Montague street
J. Elmore Gregory, 414 Clinton street
Ed. Grether, 184 Meserole st, E. D.
J. Griffin, 90 Sands street
G. P. Griffing, 597 Lorimer st, E. D.
S. C. Griggs, 143 Lefferts place
C. E. Gunther, 151 Clinton street
Gordon R. Hall, 264 Clinton street
Lucy M. Hall, 181 Joralemon street
A. C. Hallarn, 524 Bedford av, E. D.
Henry T. Halleck, 61 Fleet street
J. Condit Halsey, 156 Reid ave
J. M. Harcourt, 305 Clinton street
W. H. Harlin, 270 Sumner ave
J. Harrigan, 401 Clinton street
Audley Haslett, 115 Clinton street
Edwin A. Hatch, 586 Marcy ave
S. O. Hector, 120 Second place
S. Hendrickson, 636 St. Mark's ave
J. Williams Henry, 203 Halsey street
Wm. B. Hewett, 408 Cumberland st
C. N. Hoagland, 410 Clinton av
Eugene Hodenpyle, 43 7th ave
D. C. Holton, 97 Norman ave, E. D.
H. N. Hoople, 721 Greene ave
Geo. G. Hopkins, 350 Washington av
Edw. H. Hoxie, 1 Hart street
Frank P. Hudnut, 57 Hancock street
J. H. Hunt, Bedford av and Quincy st
Alex. Hutchins, 796 De Kalb ave
W. M. Hutchinson, 364 Henry street
Belcher Hyde, 282 McDonough st
J. W. Hyde, 215 Schermerhorn st
James W. Ingalls, 131 Lewis ave
L. Barstow Irish, 283 9th st
Reuben Jeffrey, Jr., Tompkins ave

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J. A. Jenkins, 150 Milton st, E. D.
F. Percy Jenks, 409 10th street
Chas. Jewett, 307 Gates ave
F. A. Jewett, 307 Gates ave
Oswald Joerg, 153 Schermerhorn st
J. Arundel John, ——
C. H. Johnson, 141 Greene ave
J. G. Johnson, 153 Joralemon street
C. N. D. Jones, 163 De Kalb street
Thos. A. Joye, 166 Clinton street
J. A. Kene, 31 Debevoise place
J. C. Kennedy, 82 Lewis ave
James J. Keyes, 236 17th street
J. S. King, 823 De Kalb ave
E. H. Knight, Washington ave cor Willoughby ave
J. L. Kortright, 252 Rodney street
J. Krauter, 67 Stanhope street, E. D.
P. H. Kretzschmar, 402 Washint'n av
Wm. H. Kretzschmar, East N. Y.
Geo. R. Kuhn, 122 Clinton street
L. DeB. Kuhn, 471 Willoughby ave
J. J. Lamadrid, 412 Greene ave
W. B. Lane, 367 Greene ave
Geo. E. Law, East N. Y.
A. W. Lawrence, 203 Bedford ave
Richmond Lennox, 164 Montague st
A. S. Leonard, 131 McDonough st
J. C. Lester, 406 Clinton street
A. H. P. Leuf, Philadelphia, Pa.
E. A. Lewis, 102 Pierrepont street
Frank Little, 135 Remsen street
W. A. Little, 923 Bedford ave
T. M. Lloyd, 125 Pierrepont street
Thos. H. Loughran; 115 William st
H. Lowenstein, 223 Bushwick ave
D. F. Lucas, 552 Pacific street
Jesse B. Lung, 382 Marion street
John L. Macumber, Kings County Insane Hospital, Flatbush
Wm. Maddren, 1 Hanson place
Edw. Malone, 111 S. 2d st, E. D.
C. S. Mann, 480 Greene ave
L. D. Mason, 171 Joralemon street
A. Ross Matheson, 337 Union street
Nath. Matson, 415 Greene ave
W. B. Matson, 415 Greene ave
H. C. Matthews, 894 Quincy street
Arthur Matthewson, 139 Montague street
J. B. Mattison, 814 State street
Alex. J. McCatty, Montego Bay, Jamaica, W. I.
L. A. McClelland, 167 Hull street
J. A. McCorkle, 149 Clinton street
J. C. McEvitt, 407 Clinton street
James McManus, 445 4th av, S. B.
Geo. McNaughton, 216 Greene ave
L. C. McPhail, 127 Pierrepont street
R. M. Mead, 344 Sackett street
L. E. Meeker, 956 Gates ave
John Merritt, 842 President street
E. G. Metcalf, 147 Lee ave, E. D.
Joseph Merzbach, 144 Wyckoff street
F. H. Miller, Pennsylvania ave, East N. Y.
W. F. Millington, 328 9th st, S. B.
E. J. Chapin Minard, 243 Quincy st
Wm. Moitrier, 115 Lorimer st, E. D.
J. F. Moore, 444 Pacific street
Henry H. Morton, 266 Clinton street
Eliza M. Mosher, 181 Joralemon st
David Myerle, 570 Bedford av, E. D.
Jacob Nehrbas, 846 Bedford ave
F. R. Newman, 135 Madison street
Hayden Nichols, 195 Baltic street
N. L. North, Sr., 509 Bedford av, E. D.
N. L. North, Jr., 509 Bedford av, E. D.
T. H. Northridge, 35 Greene ave
W. A. Northridge, 366 Schermerhorn street
J. F. O'Connell, 334 Jay street
J. O'Grady, 122 Sands street
C. Olcott, 572 Bedford ave, E. D.
S. H. Olmstead, 404 Clinton street
Robt. Ormiston, 117 S. Elliott place
J. W. Ostrande, 95 Clark street
Geo. A. Ostrander, 61 Greene ave
A. Otterson, 179 Washington ave
Wm. C. Otterson, 144 Pierrepont st
May R. Owen, 241 Bergen street
E. D. Page, 418 Greene ave
A. R. Paine, 99 Lafayette ave
Ernest Palmer, 155 Clinton street
E. Parkes, 39th and Kossuth place
M. E. Parrott, 379 Jefferson st

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John M. Peacock, 247 Madison street
Chas. E. Perkins, Gouverneur Hospital, N. Y. City
L. S. Pilcher, 145 Gates ave
H. J. Pomeroy, 35 5th ave
W. H. B. Pratt, 94 6th ave
S. R. Pray, 553 Quincy street
H. F. Prayer, 119 Reid ave
J. J. Prendergast, 259 Clinton street
P. J. Prendergast, 531 Henry street
J. S. Prout, 26 Schermerhorn street
J. R. Quinn, 449 Lafayette ave
H. W. Rand, 147 Clinton street
W. H. Randolph, 179 Herkimer st
John Rankin, 302 Sumner ave
J. C. Rappold, 750 Flushing av, E. D.
Jos. M. Raub, 295 Clinton street
John A. Ray, 45 Jefferson ave
J. H. Raymond, 173 Joralemon st
Henry N. Read, 541 Henry street
Henry B. Reed, 12 Verona place
Wm. W. Reese, 175 Hicks street
John Rendell, 100 Penn street
Edwin Reynolds, 140 Lafayette ave
J. E. Richardson, 125 S. Oxford st
H. F. W. Risch, 208 17th street
A. H. Ritter, 262 Hewes street
J. W. E. Roby, 115 Lee ave, E. D.
T. M. Rochester, 2 St. James place
Frank W. Rockwell, 6 Lafayette av
H. C. Rogers, 377 Gates ave
Alex. J. Rooney, 226 17th street
F. H. Ross, 128 Sands street
Anna F. Rowe, 223 Cumberland st
E. S. Rupert, 38 Schermerhorn street
John E. W. Sanderson, 154 Schermerhorn street
S. Santoire, 148 Clinton street
O. T. Sauer, 292 13th street
J. C. Schapps, 486 Bedford av, E. D.
P. L. Schenck, 60 St. Mark's ave
Teunis Schenck, New Utrecht
C. B. Schlatter, 158 17th street
F. A. Schlitz, 318 S. 5th st, E. D.
Fred J. Schoop, 80 Hanson place
J. E. Schroeder, 151 9th street
Wm. Schroeder, 339 President street
G. Schmetzer, 734 Flushing ave
R. Scrimgeour, 316 10th street
J. J. Shanks, Kings County Insane Asylum
Frank W. Shaw, 327 Greene ave
J. C. Shaw, 2 Sidney place
A. W. Shepard, 126 Willoughby st
C. H. Shepard, 81 Columbia Heights
W. Sherman, 338 9th street
S. Sherwell, 33 Schermerhorn street
N. B. Sizer, 336 Greene ave
A. J. C. Skene, 167 Clinton street
Jos. E. Smith, 270 Marcy ave, E. D.
L. C. Smith, 143 Adelphi street
L. J. Sorensen, 124 Carroll street
Agnes Sparks, 93 S. Portland ave.
Wm. E. Spencer, 264 Clermont street
L. Fleet Spier, 162 Montague street
Carl H. C. Steinke, 220 17th street
J. H. Sterling, 225 Schermerhorn st
R. H. Stone, 178 Jay street
Wm. E. Stratton, 71 7th ave
F. H. Stuart, 123 Joralemon street
Arnold Stub, 136 Dean street
W. C. Sueden, 131 Prospect place
J. D. Sullivan, 74 McDonough street
W. F. Swalm, 118 Lafayette ave
C. H. Terry, 540 Washington ave
Wm. H. Thayer, 171 Livingston st
H. S. Thorn, Fort Hamilton, L. I.
E. P. Thwing, 156 St. Mark's place
T. W. Topham, 38 Willoughby street
G. H. Treadwell, 806 Marcy ave
J. H. Trent, 196 17th street
H. A. Tucker, Jr., 293 Clinton street
H. C. Turner, 91 First place
J. M. Turner, 413 Henry street
J. Y. Tuthill, 100 Fort Greene place
J. Van Cott, 188 Henry street
J. C. Vanderveer, 610 6th ave
J. R. Vanderveer, 301 Carlton ave
R. L. Van Kleck, Gravesend, L. I.
John Van Ness, 942 Bedford ave
B. S. Van Zile, 161 Willoughby st.
G. Wackerhagen, 188 State street
J. D. Wade, 252 S. 9th street, E. D.
J. E. Wade, 904 Greene ave
Jerome Walker, 8 7th ave
Wm. Wallace, 183 Congress street

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Geo. W. Wells, 32 Nassau street New York City
Thos. L. Wells, 883 St. Mark's ave
G. W. Welty, 500 Clinton street
F. E. West, 24 Clinton street
Benj. F. Westbrook, 174 Clinton st
G. R. Westbrook, 194 Schermerhorn street
F. Weygandt, 645 Bedford ave
J. S. Wight, 30 Schermerhorn street
G. Rankin White, 380 9th street
Geo. W. White, 105 Joralemon street
Henry D. White, 506 Monroe street
H. Whiting, 224 Hewes street
Geo. Wieber, 180 S. 8th street, E. D.
J. G. Wilbur, 544 Washington ave
Thos. Wilde, 121 7th ave
H. F. Williams, 450 Classon ave
Jas. McF. Winfield, 11 New York av
D. Morris Woolley, 310 Sumner ave
F. W. Wunderlich, 165 Remsen st
J. L. Zabriskie, Flatbush
C. Zellhofer, 175 S. 4th street, E. D.

Number of Members, 362.

NOTE.—The following members died during the year:
J. S. Andrews.
James Crane.
J. N. Freeman.
C. L. Mitchell, March 8, 1888.
Wm. M. Thallon, October 1, 1888.

MEDICAL SOCIETY OF THE COUNTY OF LEWIS.

(Organized January 8, 1861.)

MEETINGS.—Annual, fourth Tuesday in June; semi-annual, third Tuesday in December; quarterly, fourth Tuesday in March and September.

Officers. (June 26, 1888.)

A. H. Crosby, President.
R. H. Ash, Vice-President.
W. O. Hubbard, Secretary.
W. H. Johnson, Treasurer.

Delegate to State Medical Society: C. E. Douglass.

Members.

R. H. Ash, Port Leyden
H. J. Cornish, Turin
F. A. Crane, Lowville
A. H. Crosby, Lowville
Charles E. Douglass, Lowville
G. P. English, Boonville
David Faudry, Barnes' Corners
F. P. Francis, Croghan
W. S. Hendie, Lowville
W. O. Hubbard, Lowville
W. W. Jamieson, New Bremen
W. H. Johnson, Port Leyden
Albert A. Joslin, Martinsburgh
H. F. Kilborn, Croghan
C. P. Kirley, Lowville
C. H. Merriam, Locust Grove
D. L. Murray, Croghan
Otto Pfaff, Turin
Laurantine Rouchelle, Croghan
O. O. Stowell, Copenhagen
P. H. Von Zierolshofen, New Bremen

Number of Members, 21.

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MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON.

(Organized June, 1806.)

MEETINGS.—Annual, second Tuesday in June, at Geneseo; semi-annual, second Tuesday in January, at the place selected by the Society; quarterly, at the call of the President.

Officers. (June 12, 1888.)

Frank B. Dodge, President.
W. B. Alley, Vice-President.
Wade H. Botsford, Secretary.
F. H. Moyer, Treasurer.

Censors: M. C. Rowland, J. A. M. Dyke, L. M. Phillips.

Committee on Hygiene: Frank H. Dodge, William B. Alley, Z. H. Joslyn.

Delegate to State Medical Society: J. E. Crisfield.

Members.

William B. Alley, Nunda
L. J. Ames, Mt. Morris
George H. Bennett, Lima
Z. H. Blake, Dansville
Wade H. Botsford, Geneseo
John P. Brown, Tuscarora
J. W. Craig, Geneseo
J. E. Crisfield, Dansville
John Denton, Moscow
F. B. Dodge, Mt. Morris
J. A. M. Dyke, York
J. G. Filkins, York
Clement C. Goodrich, Avon
P. C. Guinan, Lima
Jacob M. Hagey, Mt. Morris
G. G. Jones, Scottsburg
Z. H. Joslyn, Mt. Morris
B. T. Kneeland, Dalton
W. E. Lauderdale, Geneseo
W. E. Lauderdale, Jr., Geneseo
E. D. Leffingwell, Dansville
J. H. Losey, Conesus
R. J. Menzie, Caledonia
F. H. Moyer, Moscow
William Nesbit, Avon
Charles V. Patchin, Dansville
F. M. Perine, Dansville
L. M. Phillips, Conesus
C. H. Richmond, Livonia
M. C. Rowland, Geneseo
H. P. Shelden, Livonia
George Warren Squires, East Avon
W. F. Wallace, East Avon

Number of Members, 33.

MEDICAL SOCIETY OF THE COUNTY OF MADISON.

MEETINGS.—Annual, second Tuesday in July; semi-annual, in January, at the call of the President.

Officers. (July 10, 1888.)

F. E. Dewey, President.
H. C. Brown, Vice-President.
Gilbert Birdsall, Secretary.
Amelia Tompkins, Treasurer.

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Censors and Committee on Hygiene: I. N. Goff, William Taylor, N. P. Warner, F. D. Beebe, R. H. Gray.

Delegate to State Medical Society: Edgar L. Miller.

Members.

E. P. Bailey, Oneida
Frank D. Beebe, Hamilton
M. Billington, Chittenango
Gilbert Birdsall, North Brookfield
H. Clift Brown, Brookfield
E. H. Bullock, Cazenovia
O. W. Burhyte, Brookfield
H. W. Carpenter, Oneida
H. T. Carter, Oneida
D. D. Chase, Morrisville
Amos Chesebrough, South Brookfield
Silas S. Clarke, DeRuyter
H. S. Crandall, Leonardsville
F. E. Dewey, Peterboro
J. R. Eaton, Chittenango
Charles L. Furman, Hamilton
E. H. Galloway, Eaton
I. N. Goff, Cazenovia
R. H. Gray, Oneida
Carl D. Green, Poolville
L. P. Greenwood, Erieville
W. H. Griffith, Munnsville
Horace Halbert, Canastota
George W. Harris, Georgetown
H. F. Hubbard, Verona, Oneida
Milton B. Jarvis, Canastota
M. R. Joy, Perryville
J. W. Knapp, Canastota
George F. Lloyd, Lebanon
Venoni W. Mason, Canastota
Sands C. Maxson, Leonardsville
Edgar L. Miller, Eaton
H. P. Mead, Morrisville
S. P. Moore, Munnsville
G. B. Munger, Perryville
A. R. Nicholson, Madison
C. H. Perry, Oneida
Charles H. Ransom, Erieville
Albert C. Rogers, Brookfield
A. D. Smith, Cazenovia
Ira Spencer, DeRuyter
R. F. Stevens, Canastota
William Taylor, Canastota
J. Mott Throop, Hamilton
Amelia Tompkins, Hamilton
H. D. Ure, Wampsville
N. P. Warner, New Woodstock
C. B. Wilcox, Earlville

Number of Members, 48.

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

MEETING.—Annual, last Wednesday in May.

Officers. (May 31, 1888.)

W. J. Herriman, President.
F. A. Jones, Vice-President.
W. B. Jones, Secretary.
W. R. Howard, Treasurer.

Censors: E. H. Howard, E. W. Mulligan, C. E. Darrow, H. T. Williams, S. W. Davison.

Delegates to State Medical Society: A. Dann, M. L. Mallory, E. H. Howard.

Members.

(Where no town is mentioned Rochester is to be understood.)

F. D. Andrew, 116 East avenue
E. B. Angell, 261 Alexander street
Azel Backus, 78 Eagle street
Ogden Backus, 67 S. Fitzhugh street
W. C. Bailey, Clifton
C. C. Barber, 149 Hudson street

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G. L. Beach, 91 South avenue
H. S. Beahan, 343 West avenue
James Beahan, 343 West avenue
Richard Bleuler, 187 N. Clinton st
W. A. Botsford, 356 Central avenue
J. C. Bowen, Klinck, near Monroe av
S. C. Bradley, 47 Elm street
A. N. Braham, Brockport
Chas. A Briggs, 209 Alexander street
C. M. Briggs, Fairport
W. H. Briggs, 138 E. Main street
Dorse W. Brown, 281 West av
T. A. Brown, Brighton
Charles Buckley, 127 E. Main street
James C. Buckley, 127 E. Main street
J. J. A. Burke, 65 East avenue
Chas. McD. Cameron, 106 East ave
A. B. Carpenter, Greece
A. M. Carpenter, Greece
D. Carpenter, Brockport
P. D. Carpenter, Pittsford
George G. Carroll, 8 Sophia street
A. C. Cartwright, 76 N. Fitzhugh st
J. W. Casey, 25 Sophia street
Charles G. Combs, 45 Monroe avenue
W. L. Conklin, 96 South avenue
J. A. Cormier, 259 North avenue
J. B. Cowles, Fairport
J. W. Craig, Churchville
Marion Craig, 228 Lake avenue
James F. Crowley, 369 State street
D. F. Curtis, 89 South avenue
Thomas Daly, 113 South Union street
A. Dann, 278 East Main street
C. E. Darrow, 116 East avenue
S. W. Davison, 142 State street
C. A. Dewey, 78 South Fitzhugh st
C. S. Dolly, 52 East avenue
Sarah R. A. Dolly, 52 East avenue
Frank F. Dow, 42 South avenue
J. D. Dunning, Webster
Edgar H. Earl, 423 Lyell avenue
W. S. Ely, 78 South Fitzhugh street
Porter Farley, 312 Mount Hope ave.
H. M. Fenno, 77 W. Main street
John W. Flick, Honeoye Falls
W. S. Fuller, Fairport
L. T. Gandy, Chili
Frederick Geare, 158 West avenue
George U. Gleason, 5 Lyell avenue
Erlo P. Gray, Culver Park cor. E. ave
John P. Gray, 272 Alexander street
A. R. Gumberts, 48 Chatham street
Eugene F. Hamburg, Genesee st, near Brooks avenue
F. F. Hamilton, 118 Jefferson ave
Robert T. Hayes, 16 Reynolds street
W. J. Herriman, 161 State street
J. M. Hill, Brockport
L. L. F. Hillman, Greece
S. A. Holman, North Parma
B. L. Hovey, 34 North Fitzhugh st
Edward Howard, Churchville
E. H. Howard, Insane Asylum, Roch'r
W. R. Howard, 392 East Main street
W. J. Howe, Scottsville
Frank A. Jones, Charlotte
Jonas Jones, 290 West avenue
S. C. Jones, 37 North Fitzhugh street
Wm. B. Jones, 36 Phelps avenue
J. J. Kempe, 14 Grove street
N. F. Kiefer, 588 North Clinton street
Myron Knowlton, 3 Park avenue
Henry Koch, 19 Clinton place
W. G. Lacy, Scottsville
W. H. Lakeman, 97 Bolivar street
David Little, 162 Plymouth avenue
M. L. Lord, 27 Hawthorn street
J. M. Magill, Fairport
A. P. Maine, Webster
M. L. Mallory, 69 N. Fitzhugh street
F. A. Mandeville, 98 North avenue
W. B. Mann, Brockport
D. G. Mason, East Henrietta
H. B. Miner, West Mendon
E. M. Moore, 74 S. Fitzhugh street
E. M. Moore, Jr., 74 S. Fitzhugh st
Richard Mott Moore, 74 S. Fitzhugh street
Wm. A. Moore, 103 Clarissa street
Franz Muecke, 75 Chatham street
E. W. Mulligan, 290 West avenue
H. R. Nettleton, 270 Lake avenue
J. B. Nold, 165 North avenue
T. A. O'Hare, 97 State street
E. S. Olin, 178 Andrews street

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Wm. Y. Page, 95 North avenue
Joseph Pease, Hamlin
S. Perry, 103 S. Fitzhugh street
H. C. Phillips, 5 Lyell avenue
S. A. Pierce, 89 East Main street
E. B. Potter, Insane Asylum
B. I. Preston, 31 Chestnut street
E. S. Preston, 31 Chestnut street
Edward J. Price, 88 Nassau street
C. E. Rider, 53 South Fitzhugh street
Wheelock Rider, 53 South Fitzhugh st
P. E. Rivard, 174 East Main st
A. S. Rockwell, 76 North Fitzhugh st
J. O. Roe, 28 North Clinton street
Obadiah Rogers, Brockport
J. L. Roseboom, 628 E. Main street
Wm. W. Ruby, 104 W. Main street
T. D. Rupert, Mendon
Richard H. Satterlee, City Hospital
F. H. Sawers, 41 State street
Q. C. Schuhart, 248 St Joseph street
Anna H. Searing, 52 East avenue
H. B. Sherman, 22 South Ford street
F. G. Sherwood, 52 S. Clinton street
W. Sibley, 95 Lake avenue
Mary J. Slaight, 32 South Clinton st
W. C. Slayton, Spencerport
J. L. Smith, 40 North Clinton street
N. G. Soble, Rochester
O. T. Stacy, 284 Alexander street
Mary E. Stark, 27 Rowley street
D. Starkey, Chili
C. S. Starr, 95 North avenue
Peter Stockschlaeder, 161 South ave
E. V. Stoddard, 68 S. Washington st
H. W. Streeter, 108 S. avenue
J. E. Sutton, Scottsville
T. O. Tait, 18 Marietta street
D. C. Throop, 136 North avenue
Harriet M. Turner, 56 South Union st
P. G. Udell, Spencerport
J. C. Urquhart, 186 N. Clinton street
George Waldron, 408 Plymouth ave
John E. Weaver, 201 East avenue
William H. Webb, 14 Windsor street
L. A. Wiegel, 54 N. Clinton street
J. W. Whitbeck, 209 East avenue
E. E. Whitcomb, 232 East Main street
C. W. Wilbor, 466 North Clinton st
H. T. Williams, 209 East avenue
Benjamin Wilson, 139 Lake avenue
A. P. Wisner, 222 Plymouth avenue
C. D. Wooden, 129 Frank street
Lettie H. Woodruff, 223 Plymouth ave
F. W. Zimmer, 45 Monroe avenue

Number of Members, 155.

NOTE.—Dr. H. H. Langworthy died February 5, 1889.
Dr. A. Mandeville died August 31, 1888, æt. 68.
Dr. J. W. Southworth died March 17, 1889, æt. 46.
Dr. E. E. Curtis died April 23, 1889.

MEDICAL SOCIETY OF THE COUNTY OF MONTGOMERY.

(Organized July, 1806.)

MEETINGS.—Annual, second Wednesday in June; quarterly, second Wednesday in September, December, and March; all at Fonda.

Officers. (June 11, 1888.)

C. M. Klock, President.
E. T. Rulison, Vice-President.
Wm. J. Peddie, Secretary.
F. G. Buckbee, Treasurer.
Delegate to State Medical Society: Charles Stover.

Members.

Douglas Ayres, Fort Plain
William H. Biggam, Charlestown
William H. Biggam, J., Fort Plain
Edmond F. Bronk, Amsterdam

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Frank V. Brownell, Fort Plain
I. I. Buckbee, Fonda
Thompson Burton, Fultonville
C. W. DeBaum, Fultonville
Wm. H. DeLamater, Minaville
J. R. Fairbanks, Amsterdam
S. H. French, Amsterdam
Ezra Graves, Amsterdam
William Hillegas, Amsterdam
T. Hyland, Amsterdam
R. G. Johnson, Amsterdam
C. M. Klock, St. Johnsville
H. M. Leach, Glen
S. D. Lewis, Amsterdam
Daniel M. McMartin, Amsterdam
Alex. Nellis, Jr., Willard, Seneca Co
John Parr, Buell
William J. Peddie, Fultonville
William R. Pierce, Port Jackson
Darwin Potter, Fort Plain
A. Putnam, Amsterdam
William H. Robb, Amsterdam
E. E. Rulison, Port Jackson
E. T. Rulison, Amsterdam
F. E. Simons, Canajoharie
J. A. Smeallie, Canajoharie
A. V. H. Smyth, Amsterdam
O. J. Stafford, Canajoharie
Charles Stover, Amsterdam
Peter L. Suits, Tribe's Hill
D. M. Taylor, Canajoharie
C. F. Timmerman, Amsterdam
Christian C. Vedder, St. Johnsville
S. A. Wessels, Canajoharie

Number of Members, 38.

NOTE.—Deceased during the year, Drs. F. G. Buckbee, Fonda, Lewis St. George, Canajoharie, and W. Smeallie, Canajoharie.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

MEETINGS.—Annual, fourth Monday in October; stated meetings, the fourth Monday in each month, June, July, and August excepted, at the New York Academy of Medicine, 12 West Thirty-first Street.

Officers. (October, 1888.)

Alexander S. Hunter, President.
L. Bolton Bangs, Vice-President.
Charles H. Avery, Secretary.
William E. Bullard, Assistant Secretary.
John S. Warren, Treasurer.

Censors: J. Leonard Corning, Daniel Lewis, Andrew F. Currier, George H. Fox, Laurence Johnson.

Committee on Hygiene: R. VanSantvoord, Cyrus Edson, Sanger Brown, W. H. Flint, J. A. Andrews.

Delegates to State Medical Society.

L. B. Bangs,
S. S. Burt,
A. N. Brockway,
C. E. Bruce,
J. L. Corning,
H. E. Crampton,
A. F. Currier,
W. B. DeGarmo,
O. B. Douglas,
E. D. Fisher,
G. M. Hammond,
N. J. Hepburn,
L. E. Holt,
H. P. Loomis,
W. M. McLaury,
J. A. Moore,
W. O. Moore,
P. A. Morrow,
H. T. Peirce,
W. C. Phillips,
C. C. Rice,
F. W. Ring,
S. O. VanderPoel,
R. VanSantvoord.

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Members.

Robert Abbe, 11 W. 50th street
Frank Abbott, 22 W. 40th street
George E. Abbott, 71 E. 59th street
Onofrio Abruzzo, 223 Center street
John C. Acheson, 220 E. 17th street
Isaac Adler, 12 E. 60th street
David H. Agan, 363 Broome street
J. Francis Aitken, 220 E. 35th street
John S. Aitkin, 359 W. 30th street
Welcome T. Alexander, St. Nicholas avenue and 157th street
Charles W. Allen, 102 E. 57th street
Thomas H. Allen, 19 Park avenue
John Alsdorf, 346 W. 48th street
H. A. C. Anderson, 175 E. 85th street
James H. Anderson, 30 University pl
Joseph Anderson, 27 W. 57th street
Joseph Alfred Andrews, 40 W. 24th st
Frederick C. Anthes, 182 E. 76th st
Emily Anthon, 13 W. 35th street
Moses Aronson, 58 Rivington street
Morris J. Asch, 5 W. 30th street
Albert S. Ashmead, 103 W. 98th street
Augustus Assenheimer, 323 E. 51st st
Emanuel J. Attinelli, 1636 Railroad avenue
David P. Austin, 251 W. 25th street
Charles H. Avery, 337 E. 18th street
Edward A. Ayers, 126 W. 45th street
James H. Bache, 449 W. 51st street
Eugene O. Bachmann, 308 W. 32d st
Gorham Bacon, 63 W. 54th street
Harold A. Bagley, 313 W. 54th street
Thomas S. Bahan, 257 W. 14th street
Thomas H. Bailey, Sturtevant House, Broadway
Mercy N. Baker, 303 E. 18th street
A. Brayton Ball, 42 W. 36th street
Henry Balser, 606 E. 9th street
William Balser, 218 E. 13th street
William L. Baner, 38 W. 40th street
Richard T. Bang, 31 Greenwich ave
L. Bolton Bangs, 127 E. 34th street
Elbert A. Banks, 70 W. 35th street
Francis M. Banta, 50 Jane street
Julius Baran, 204 E. 72d street
Asahel Barker, 47 W. 50th street
Fordyce Barker, 24 E. 38th street
John C. Barron, 17 E. Washington pl
C. C. Barrows, 7 E. 36th street
Daniel E. Barry, 447 Lexington ave
William A. Bartlett, 156 W. 53d street
Joshua L. Barton, 145 E. 46th street
Simon Baruch, 43 E. 59th street
Erskine S. Bates, 68 Madison avenue
W. H. Bates, 49 W. 57th street
Frederick M. Bauer, 218 E. 86th street
Ferdinand Beach, 201 W. 44th street
Wooster Beach, 159 E. 49th street
Carl Beck, 187 Second avenue
Frederick Bedford, 66 Fifth avenue
John N. Beekman, 18 E. 20th street
Franklin Bennett, 277 E. Broadway
George K. Bentz, 82 Second avenue
Charles Bernacki, 36 W. 28th street
John Bettino-Moise, 5 University pl
John Haskell Billings, 249 Madison av
Cornelius E. Billington, 106 Madison av
Wm. Randall Birdsall, 144 E. 74th st
Ernest R. Birkins, 221 W. 131st street
Joseph B. Bissell, 50 W. 53d street
Mary T. Bissell, 329 Fifth avenue
Carrie L. Black, 110 W. 126th street
Emily Blackwell, 53 E. 20th street
Alonzo Blauvelt, 338 W. 12th street
J. Mount Bleyer, 83 Second avenue
Moritz Bloch, 337 E. 58th street
Joseph F. Bloodgood, 27 W. 51st st
Mark Blumenthal, 53 W. 42d street
Sylvester S. Bogert, 23 2d street
Edmund A. Bogue, 29 E. 20th street
Hermann J. Boldt, 243 W. 42d street
R. O. Born, 131 W. 34th street
George H. Bosley, 229 W. 52d street
Francke H. Bosworth, 26 W. 46th st
James W. Bowden, 319 Second ave
Fred J. Bowles, 134 W. 93d street
Nathan Bozeman, 9 W. 31st street
Max Bracker, 97 Second avenue
Emil A. Bracklow, 408 W. 46th street
Edward Bradley, 19 W. 30th street
Laban L. Bradshaw, 154 E. 74th street

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Alfred V. Brailly, 184 W. 80th street
Cosmo Brailly, 121 E. 29th street
John W. Brannan, 54 W. 11th street
John H. Branth, 411 W. 51st street
James A. Breakell, 249 W. 52d street
David Brekes, 319 E. 51st street
Charles K. Briddon, 13 E. 33d street
Eugene Z. Brievogelle, 324 Ninth ave
Nathan E. Brill, 805 Lexington ave
E. L. Macomb Bristol, 1500 Park av
A. Norton Brockway, 50 E. 126th st
Edward B. Bronson, 123 W. 34th st
Charles H. Brown, 25 W. 45th street
Dillon Brown, 102 E. 57th street
Frederick T. Brown, 40 E. 31st street
Sanger Brown, 173 Ft. Washington Ridge Road
Charles E. Bruce, 162 E. 37th street
Albert F. Brugman, 588 E. 141st street
Joseph D. Bryant, 66 W. 35th street
Alexander Buchanan, 67 W. 36th st
Augustus F. Büchler, 251 W. 45th st
Charles W. Büchler, 251 W. 45th st
Albert H. Buck, 19 E. 38th street
E. Valentine Buck, 138 W. 46th street
Francis D. Buck, 43 W. 29th street
Charles A. Bucklin, 206 W. 42d street
Charles T. Buffum, 12 E. 28th street
L. Duncan Bulkley, 4 E. 37th street
Charles S. Bull, 51 W. 36th street
William T. Bull, 35 W. 35th street
William E. Bullard, 112 E. 40th street
William M. Bullard, 302 Madison ave
T. Hamilton Burch, 1 S. Fifth avenue
Thomas H. Burchard, 24 W. 40th st
Joseph J. Burian, 232 E. 33d street
Frederick A. Burrall, 48 W. 17th st
Maurice J. Burstein, 184 Henry street
Stephen S. Burt, 37 W. 32d street
R. B. Burton, 223 E. 48th street
Thomas W. Busche, 129 Second ave
Charles H. Bushong, 355 W. 14th st
George H. Butler, 42 E. 66th street
Marvin S. Buttles, 226 W. 105th street
Joseph H. Byrne, 345 W. 51st street
Augustus Caillé, 185 Second avenue
R. A. Caldwell, 38 W. 34th street
Peter A. Callan, 35 W. 38th street
E. Miller Cameron, 22 W. 47th street
D. M. Cammann, 19 E. 33d street
John L. Campbell, 259 W. 42d street
Robert Campbell, 376 W. 32d street
William C. Campbell, 259 W. 42d st
Iretus G. Gardner, 235 W. 34th street
George F. Carey, 210 E. 17th street
Albro R. Carman, 27 W. 127th street
Frank W. Carmon, 386 Broome street
Frank B. Carpenter, 186 E. 18th street
Elon N. Carpenter, 113 Madison ave
David C. Carr, 136 W. 126th street
James S. Carradine, 58 W. 19th street
Joseph S. Carreau, 20 W. 12th street
DeLancey Carter, 114 E. 85th street
H. Skelton Carter, 126 E. 24th street
Frederick A. Castle, 55 E. 52d street
Edwin R. Chadbourne, 31 W. 25th st
Alonzo J. Chadsey, 234 W. 16th street
Geo. W. Chamberlain, 150 E. 40th st
P. Llewellen Chambers, 596 Lexington avenue
Amory Chapin, 109 W. 45th street
Frank W. Chapin, 20 E. 28th street
Walter F. Chappell, 22 E. 42d street
George T. Chase, 236 W. 127th street
Jean F. Chauveau, 6 Ludlow place
Hobart Cheesman, 244 W. 56th st
T. M. L. Chrystie, 216 W. 46th street
Juan Cisneros, 73 W. 36th street
Stephen J. Clark, 21 W. 11th street
William B. Clark, 50 E. 31st street
Geo. P. Clemens, 1686 Lexington ave
Clement Cleveland, 59 W. 38th street
George D. Clift, 109 E. 18th street
J. D. Close, 636 E. 143d street
Meredith Clymer, 65 W. 38th street
Thomas F. Cock, 18 W. 31st street
Henry C. Coe, 987 Madison avenue
Palmer C. Cole, 254 W. 42d street
Christopher J. Colles, 12 W. 35th st
Roswell P. Collin, 50 E. 31st street
Herman L. Collyer, 173 E. 83d street
Frank C. Combes, 220 E. 112th street
David C. Comstock, 83 Lexington av
William S. Conover, 203 W. 135th st
Harry B. Conrad, 102 E. 74th street
Lewis Conrad, 112 E. 57th street

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Henry C. Cooper, 410 E. 26th street
J. Leonard Corning, 26 W. 47th st
John B. Cosby, 308 W. 48th street
Garret Cosine, 49 E. 123d street
Jeremiah Coughlin, 205 Henry street
Thomas Courtney, 330 Second ave
Henry E. Crampton, 256 W. 121st st
F. M. Crandall, 113 W. 95th street
John Joseph Crane, 67 W. 71st street
Joseph S. Crane, 41 W. 45th street
Charles C. Cranmer, 227 W. 25th st
Patrick W. Cremin, 846 Lexington av
James K. Crook, 135 Lexington ave
Thad. M. B. Cross, Sturtevant House, 29th street, Broadway
Andrew F. Currier, 159 E. 37th st
Edward Curtis, 27 Washington place
H. H. Curtis, 29 W. 30th street
John G. Curtis, 127 E. 35th street
B. F. Curtis, 35 W. 31st street
Elizabeth Cushier, 53 E. 20th street
William F. Cushman, 325 W. 22d st
John R. Cypert, 656 Lexington ave
Theophilus Y. Dabb, 303 E. 34th st
Markar G. Dadirrian, 334 E. 17th st
A. P. Dalrymple, 337 W. 35th street
Charles L. Dana, 50 W. 46th street
Samuel W. Dana, 313 W. 33d street
Annie S. Daniel, 314 E. 15th street
Frank H. Daniels, 126 W. 126th st
Frederick Danne, 100 E. 17th street
Thomas Darlington, Jr., Church st, Kingsbridge
Albert A. Davis, 119 E. 62d street
Oliver B. Dawson, 71 W. 124th street
Walter DeF. Day, 56 E. 34th street
William A. Dayton, 13 W. 26th st
Wilmot W. Dees, 223 E. 30th street
William B. DeGarmo, 56 W. 36th st
Frederick DeKraft, 467 Fifth avenue
Simon Depager, 74 W. 35th street
Louis DePlasse, 28 W. 24th street
Stephen DeWolfe, 139 W. 34th street
Francis Delafield, 12 W. 32d street
D. Bryson Delavan, 1 E. 33d street
Ellery Denison, 124 W. 13th street
Frederick S. Dennis, 21 E. 21st street
Richard H. Derby, 9 W. 35th street
S. Henry Dessau, 47 W. 56th street
William Detmold, 38 E. 9th street
J. Harvie Dew, 252 W. 54th street
R. G. L. Dieffenbach, 224 E. 48th st
F. H. Dillingham, 344 Lexington av
Frank I. Disbrow, 224 W. 131st st
George A. Dixon, 815 Madison ave
Julius Doepfner, 657 Lexington ave
Wm. Elliott Dold, Bloomingdale, Boulevard and 117th street
Philip E. Donlin, 129 W. Houston st
M. Donnelly, 354 W. 30th street
John H. Dorn, 51 W. 9th street
John Dorning, 252 W. 25th street
J. H. Douglas, 48 E. 26th street
O. B. Douglas, 123 E. 36th street
Wm. H. Draper, 19 E. 47th street
Charlotte C. Drummond, 355 E. 10th st
Alexander Duane, 1 Bond street
Arthur Duberceau, 238 W. 25th st
Coert Dubois, 602 Lexington avenue
C. J. Dumond, 358 W. 42d street
John F. Dunphy, 197 Clinton street
Milo M. Dunton, 37 7th street
Ghislani Durant, 46 W. 32d street
Wm. H. Dwinelle, 15 W. 34th street
John Dwyer, 182 E. 111th street
Maurice B. Early, 84 Macdougal st
Thomas S. Easton, 333 Second ave
George M. Edebohls, 198 Second ave
Carl Edel, 230 Second ave
Cyrus Edson, 54 W. 9th street
Paul Ehrhart, 313 W. 30th street
Anton Eidenbenz, 248 W. 49th street
Morris Eisler, 174 E. 60th street
Ellsworth Eliot, 48 W. 36th street
George R. Elliott, 48 E. 26th street
George T. Elliot, 23 E. 31st street
C. R. Ellison, 215 E. 112th street
Saram R. Ellison, 266 W. 43d street
J. B. Emerson, 321 Lexington ave
J. H. Emerson, 81 Madison avenue
B. McEvers Emmet, 18 E. 30th street
Thomas A. Emmet, 93 Madison ave
Max Engelsmann, 144 E. 55th street
Henry C. Eno, 58 E. 25th street
Michael Erlwein, 416 W. 125th street
G. A. Evans, 337 W. 15th street

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W. A. Ewing, 205 W. 56th street
Charles M. Fairbrother, 244 E. 53d st
W. A. Fanning, 415 W. 63d st
J. N. Farrar, 1279 Broadway
J. O. Farrington, 1991 Madison ave
William H. Farrington, Astor House
M. B. Feeney, 248 Mott street
Louis Fiegenblatt, 356 E. 79th street
S. Feinberg, 183 E. 79th street
Elisha Fenn 172 E. 116th street
John E. Ferdinand, 230 W. 125th st
James F. Furguson, 102 E. 57th st
Jose M. Ferrer, 35 E. 31st street
William J. Fields, 237 W. 45th street
Chas. S. Fischer, Jr., 110 W. 128th st
Louis Fischer, 40 Rivington street
Siegfried Fischer, 218 E. 14th street
Edward D. Fisher, 6 W. 39th street
Arthur Fishmann, 138 Rivington st
Allen Fitch, 59 W. 35th street
Joseph S. Fitzgerald, 108 E. 121st st
Martin J. Fleming, 132 Lexington av
Walter M. Fleming, 66 Madison ave
Emil Flies, 322 E. 77th street
Thomas W. P. Flinn, 137 E. 28th st
William H. Flint, 37 E. 33d street
William H. Fluhrer, 32 W. 33d st
James W. Flynn, 146 E. 74th street
John P. Foland, 471 Hudson street
James C. Ford, 233 E. 104th street
W. E. Forest, 29 W. Washington sq
Frank P. Foster, 16 E. 31st street
Simeon A. Foster, 218 E. 39th street
John Fourness-Brice, White Star dock, foot of 10th street
Edward P. Fowler, 38 W. 40th street
George B. Fowler, 11 W. 45th street
George H. Fox, 18 E. 31st street
Edward Frankel, 217 E. 17th street
Gustav Frauenstein, 359 W. 15th st
Gordon Frazer, 321 W. 35th street
George C. Freeborn, 18 E. 41st street
Nathaniel M. Freeman, 222 E. 87th st
Anna D. French, 314 Fifth avenue
Sarah A. French, 222 W. 38th street
Alfred Friedman, 862 Lexington ave
Frank A. Freedman, 146 E. 47th st
James J. Friedrich, 131 E. 52d street
David Froehlich, 230 E. 49th street
J. Henry Fruitnight, 161 W. 57th st
Franklin C. Fry, 76 Madison avenue
Fraser C. Fuller, 37 W. 50th street
Robert M. Fuller, 136 W. 42d street
Henry J. Garrigues, 155 Lexington av
John P. Garrish, 400 W. 57th street
Wm. J. Gaudineer, 131 E. 116th st
Thomas T. Gaunt, 32 W. 33d street
Harvey S. Gay, 49 W. 12th st
Arpad G. Gerster, 56 E. 25th street
Virgil P. Gibney, 23 Park avenue
J. Edward Giles, 127 E. 16th street
Richard Giles, 131 E. 59th street
Walter R. Gillette, 149 W. 23d street
Wm. C. Gilliam, Manhattan Eye and Ear Hospital
Jos. Wm. Glietsman, 117 Second av
Samuel Glück, 167 E. 60th street
Wolfgang Goetz, 257 E. 10th street
James R. Goffe, 326 Lexington ave
Henry Goldman, 252 E. 105th street
H. Goldthwaite, Fifth Avenue Hotel
D. H. Goodwillie, 160 W. 34th street
Charles S. Gould, 142 Henry street
David B. Gould, 139 Hester street
Egbert H. Grandin, 109 E. 54th st
Gabriel Grant, 22 E. 49th street
John V. B. Green, 172 E. 74th street
Robert H. Green, 105 W. 71st street
Albert C. Griffin, 178 E. 76th street
E. Harrison Griffin, 112 W. 45th st
John J. Griffiths, 54 E. 69th street
Henry Griswold, 42 W. 35th street
Emil Gruening, 109 E. 23d street
William Guden, 109 8th street
Herman F. Guleke, 106 W. 38th street
Charlton R. Gulick, 47 E. 9th street
J. H. Gunning, 36 E. 65th street
Edward Gutman, 120 E. 58th street
Frederick Guttman, 79 W. 126th street
Chas. F. W. Haase, 794 Lexington ave
John Habirshaw, 260 W. 57th street
Charles E. Hackley, 63 W. 36th street
Alexander Hadden, 155 E. 51st street
Edward Hall, 17 E. 66th street
Richard J. Hall, 17 E. 49th street
William H. Hall, 129 E. 54th street

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A. McLane Hamilton, 20 E. 29th st
Graeme M. Hammond, 58 W. 45th st
Horace T. Hanks, 55 E. 59th street
George T. Harrison, 221 W. 23d street
Stephen D. Harrison, 714 Madison ave
Jacob Hartmann, 254 W. 37th street
Edward C. Harwood, 44 W. 49th st
William Hassloch, 220 E. 49th street
Walker A. Hawes, 745 Lexington ave
William H. Haynes, 319 E. 4th street
G. Dalton Hays, 324 E. 50th street
James R. Healy, Randall's Island
Allen S. Heath, 231 E. 58th street
Charles Heitzman, 39 W. 45th street
Louis Heitzman, 39 W. 45th street
J. Julio Henna, 125 E. 25th street
Morris H. Henry, 581 Fifth avenue
Edward K. Henschell, 61 W. 46th st
N. J. Hepburn, 369 W. 23d street
Joseph A. Herb, 226 E. 10th street
Everett Herrick, 126 Madison avenue
Emil Heuel, 352 Willis avenue
Franz Heuel, Jr., 26 Irving place
Harold H. Heyer, 56 W. 39th street
George B. Hickok, 242 E. 12th street
Thomas J. Hillis, 51 Charlton street
Alfred K. Hills, 465 Fifth avenue
Arthur T. Hills, 465 Fifth avenue
Joseph Hilton, 178 Henry street
John H. Hinton, 41 W. 32d street
Charles Hitchcock, 61 W. 36th street
H. M. Hitchcock, 6 E. 58th street
Urban G. Hitchcock, 51 W. 29th street
Pierre C. Hoag, 107 E. 72d street
Emanuel Hochheimer, 224 E. 72d st
Abbott Hodgman, 141 E. 38th street
Emil W. Hoeber, 154 E. 50th street
William F. Holcombe, 54 E. 25th st
T. N. Holden, 294 East Broadway
Thomas H. Holgate, 206 W. 14th st
George W. Holmes, 1491 Broadway
John F. Holmes, 165th st. near Boston avenue
Martha C. Holmes, 13 W. 125th street
L. Emmett Holt, 15 E. 54th street
Edgar S. Holt, 168 W. 54th street
George B. Hope, 34 W. 51st street
John L. Hopkins, 259 W. 54th street
J. Swinburne Hopkins, 223 W. 12th st
John Horn, 147 E. Broadway
Lewis S. Horton, 149 W. 22d street
Lucius W. Hotchkiss, 30 E. 35th street
Joseph W. Howe, 38 W. 24th street
Frank A. Hoyt, 150 Lexington avenue
George E. Hubbard, 252 W. 53d street
Samuel T. Hubbard, 27 W. 9th street
William B. Hubbard, 86 Madison ave
William N. Hubbard, 26 W. 39th st
Francis Huber, 113 E. Broadway
Joseph J. Hull, 158 W. 34th street
Frederic T. Hume, 82 E. 79th street
William A. Hume, 82 E. 79th street
George H. Humphreys, 23 E. 47th st
Alexander S. Hunter, 32 E. 29th street
Dwight W. Hunter, 137 W. 126th st
James B. Hunter, 2 E. 33d street
Abel Huntington, 346 Broadway
Francis Hustace, 413 Madison avenue
Nathaniel C. Husted, 361 W. 42d st
Frederick E. Hyde, 20 W. 53d street
Carlo Imperatori, 505 Pearl street
John Arthur Irwin, 434 Fifth avenue
John B. Isham, 1055 Lexington ave
Frank W. Jackson, 12 W. 18th street
George Thomas Jackson, 14 E. 31st st
William H. Jackson, 556 Madison av
Abraham Jacobi, 110 W. 34th street
Mary Putnam Jacobi, 110 W. 34th st
Arthur M. Jacobus, 131 W. 48th street
George W. Jacoby, 100 E. 58th street
Edward H. Janes, 208 W. 42d street
Edward G. Janeway, 51 E. 25th street
Joseph E. Janvrin, 191 Madison ave
William C. Jarvis, 25 E. 31st street
John C. Jay, Jr., 17 W. 46th street
Charles C. Jennings, 179 W. 76th st
David D. Jennings, 352 Second avenue
Charles T. Jewett, 257 W. 15th street
Saturnino M. Jimenez, 73 W. 36th st
Laurence Johnson, 363 W. 28th street
Peter A. Johnson, 144 W. 32d street
William H. Johnson, 110 W. 27th st
George W. Johnston, 70 Rivington st
Israel C. Jones, 182d st. and 3d avenue
S. Beach Jones, 28 W. 32d street
S. Seabury Jones, 809 Lexington ave

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William W. Jones, 51 W. 28th street
Adoniram B. Judson, 38 E. 25th street
Edward A. Judson, 18 Greene street
Kenneth F. Junor, 160 W. 29th street
Moses S. Kakeles, 243 E. 49th street
Richard Kalish, 50 W. 36th street
Fred. Kammerer, 29 E. 62d street
Adolph Kantrovitz, 126 Rivington st
W. H. Katzenbach, 22 W. 45th street
Guido Katzenmayer, 166 E. 51st street
E. J. Kauffmann, 126 E. 64th street
T. J. Kearney, 107 Lexington avenue
Burtus M. Keeney, 216 W. 121st street
John F. Keefe, 25 Oliver street
Theodore H. Kellogg, 48 W. 36th st
Charles B. Kelsey, 25 Madison avenue
William M. Kemp, 267 W. 23d street
John T. Kennedy, 107 E. 29th street
William C. Kennedy, 167 W. 34th st
Adolph Kessler, 644 Lexington avenue
Theodore Keune, 230 E. 119th street
Edward L. Keyes, 1 Park avenue
Eleanor B. Kilham, 5 Livingston place
Charles A. Kinch, 285 W. 70th street
David F. King, 651 Lexington avenue
Beverly O. Kinnear, 66 W. 38th street
Francis P. Kinnicutt, 42 W. 37th st
Isaac L. Kipp, 448 Fifth avenue
Joseph M. W. Kitchen, 168 W. 58th st
Gustav A. Kletzsch, 252 E. 60th street
Hermann G. Klotz, 222 E. 19th street
Herman Knapp, 25 W. 24th street
John B. Knapp, 40 W. 48th street
Charles H. Knight, 20 W. 31st street
George Knipe, 354 W. 24th street
August Koehler, 215 E. 19th street
R. A. Koempel, 119 Orchard street
Henry Koplik, 175 E. 70th street
Augustus Krehbiel, 64 7th street
Carl F. Kremer, 94 Second avenue
Henry Krollpfeiffer, 48 St. Mark's pl
Florian Krug, 13 E. 41st street
Herman F. Kudlich, 137 W. 10th st
Salvadore J. Lahey, 7 Prince street
Edward W. Lambert, 2 E. 37th street
M. Landesburg, 40 W. 34th street
Charles L. Lang, 131 E. 76th street
Fred Lang, 691 Lexington avenue
Gustav Langmann, 115 W. 57th street
W. P. Langworthy, 163 W. 45th street
James R. Latham, 165 W. 11th street
Joseph B. Lawrence, 109 W. 126th st
Frederick B. Lawson, 24 W. 30th st
Charles A. Leale, 604 Madison avenue
James R. Leaming, 18 W. 38th street
Wm. G. Le Boutillier, 829 Seventh ave
Charles C. Lee, 79 Madison avenue
Thomas M. Lees, 58 W. 35th street
Egbert L. LeFevre, 255 W. 23d street
George M. Lefferts, 6 W. 33d street
Ellen C. Leggett, 303 E. 18th street
Carl H. Lellman, 47 E. 23d street
Simeon N. Leo, 103 W. 55th street
George W. Leonard, 407 W. 73d street
A. M. Lesser, 311 E. 50th street
Wm. M. Leszynsky, 636 Lexington av
Silas P. Leveridge, 227 Henry street
R. Levi, 101 E. 59th street
Allen Levings, 45 W. 9th street
Fred J. Leviseur, 687 Lexington av
Amos C. Lewis, Skin and Cancer Hospital
Charles H. Lewis, 18 W. 61st street
Daniel Lewis, 62 Park avenue
F. N. Lewis, 107 E. 31st street
Alexander F. Liautard, 132 W. 53d st
Chas. Liebenau, 1143 Washington av
Edward N. Liell, 268 W. 38th street
Rufus P. Lincoln, 22 W. 31st street
B. Abbott Lindsey, 311 W. 23d street
Frand Livermore, 309 Mulberry street
Watts C. Livingston, 357 W. 30th st
F. O. Lloyd, 311 E. 72d street
Samuel Lloyd, 32 W. 33d street
Charles E. Locke, 245 W. 11th street
Arthur V. B. Lockrow, Seventh avenue, corner 122d street
George R. Lockwood, 30 E. 35th street
Herman Loewenthal, 127 E. 84th street
Lawson A. Long, 53 W. 26th street
Alfred L. Loomis, 19 W. 34th street
H. P. Loomis, 58 E. 34th street
James E. M. Lordly, 254 W. 38th st
Celestia A. Loring, 54 W. 55th street
William T. Lusk, 47 E. 34th street
James W. Lyman, 424 W. 34th street

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Patrick J. Lynch, 216 E. 13th street
Jonathan F. Lyon, 231 E. 116th street
Samuel K. Lyon, 312 Second avenue
D. Stanley Lyons, 223 E. 30th street
Frederick A. Lyons, 136 E. 49th st
George A. Lyons, 39 E. 62d street
Herbert G. Lyttle, 434 Jackson ave, L. I. City
Charles McBurney, 40 W. 36th street
Thomas McCabe, 316 E. 23d street
Samuel McCallum, 73 W. 127th st
Henry B. McCarroll, 18 W. 61st st
William McCracken, 305 E. 18th st
John A. McCreery, 350 Lexington av
William M. H. McEnroe, 9 E. 13th st
R. J. McGay, 61 E. 54th street
T. J. McGillicuddy, 125 E. 83d street
Frank A. McGuire, 631 Lexington av
Burnett C. McIntyre, 221 W. 4th st
William McKay, 40 E. 10th street
John J. McKew, 231 E. 40th street
W. Duncan McKim, 751 Madison av
Wm. M. McLaury, 244 W. 42d street
Malcolm McLean, 29 E. 126th street
J. A. McLochlin, 203 7th avenue
J. B. McMahon, 266 E. Broadway
N. G. McMaster, 322 E. 15th street
Robert McNeilly, 309 W. 19th street
Julia G. McNutt, 265 Lexington ave
Sarah J. McNutt, 265 Lexington ave
Calvin B. McQuesten, 15 W. 31st st
Daniel E. McSweeney, 129 E. 29th st
A. E. MacDonald, City Insane Asylum, Ward's Island
Ebenezer MacFarlan, 29 W. 127th st
Jas. R. MacGregor, 1037 Madison av
Constantine J. MacGuire, 144 E. 56th street
Colin MacKenzie, 121 W. 34th street
Kenneth F. MacLennan, 46 W. 45th street
David Magie, 32 W. 48th street
J. J. E. Maher, 232 W. 21st street
Thomas H. Manley, 302 W. 53d st
Edward C. Mann, 162 E. 23d street
Francis M. Markoe, 20 W. 30th st
Thomas M. Markoe, 20 W. 30th st
Edward T. T. Marsh, 111 Madison av
J. Martin, 550 W. 46th street
R. Osgood Mason, 170 W. 59th street
Frederick Matthews, 114 avenue C.
David Matthews, 73 E. 54th street
E. A. Maxwell, 214 E. 50th street
Charles H. May, 640 Madison avenue
Abraham Mayer, 245 E. 48th street
Emil Mayer, 232 Second avenue
A. W. Maynard, 260 W. 42d street
Samuel J. Meltzer, 179 E. 109th st
Walter Mendelson, 179 W. 74th st
Frank W. Merriam, 11 Charlton st
Fred. G. Merrill, 20 Greenwich st
Edward J. Messemer, 144 Second av
Michael J. B. Messemer, 150 Second avenue
John Messenger, 101 W. 56th street
Jos. E. Messenger, 16 Varick street
Alfred Meyer, 749 Madison avenue
Willy Meyer, 105 E. 59th street
Robert Millbank, 154 W. 48th street
John J. Milhau, 41 Lafayette place
Henry B. Millard, 4 E. 41st street
Frank E. Miller, 38 W. 24th street
Theo. DeClemont Miller, 102 E. 124th street
Thomas S. P. Miller, 150 W. 37th st
William T. Miller, 310 W. 27th st
Charles Milne, 124 E. 45th street
John C. Minor, 10 E. 41st street
Hubbard W. Mitchell, 747 Madison avenue
James Mitchels, 234 E. 60th street
Wm. F. Mittendorf, 140 Madison av
Henry Moeller, 240 W. 38th street
Edmund M. Moffett, 452 W. 51st st
Richard Mollenhauer, 215 E. 19th st
Nathan Molner, 75 Eldridge street
Joseph A. Monell, 236 W. 22d street
Fillmore Moore, Lakewood, N. J.
J. Alexander Moore, 8 W. 35th st
William O. Moore, 5 E. 30th street
Joseph Moorhead, 310 Second av
Benjamin Morje, 181 E. 71st street
J. Lee Morrill, 69 E. 79th street
George F. Morris, 306 W. 45th street
Robert S. Morris, 146 E. 71st street
Robert T. Morris, 133 W. 34th street

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Prince A. Morrow, 66 W. 40th street
William H. Morse, 153 E. 77th st
Wm. G. Mortimer, 612 Lexington av
Bowditch Morton, 225 Fifth avenue
Wm. J. Morton, 36 W. 56th street
George J. Moser, 359 E. 10th street
Gustave Mouraille, 74 W. 12th street
Richard W. Müller, 196 Second av
Paul F. Mundé, 20 W. 45th street
John P. Munn, 18 W. 58th street
Wm. H. Munn, 140 W. 45th street
Robert A. Murray, 235 W. 23d street
Thad. H. Myers, 12 W. 53d street
Robert C. Myles, 32 W. 26th street
John T. Nagle, 47 E. 21st street
Charles E. Nammack, 142 Henry st
Miles H. Nash, 227 W. 38th street
Thomas J. Naughton, 46 Henry st
George G. Needham, 218 E. 19th st
William B. Neftel, 16 E. 48th street
James Neil, 1712 Madison avenue
C. E. Nelson, 109 E. 35th street
John H. Nesbitt, 206 W. 42d street
Albert W. Neufield, 237 E. Broadway
Albert S. Newcomb, 139 W. 42d st
James E. Newcomb, 131 E. 61st st
Robert Newman, 68 W. 35th street
William Newman, 296 E. Broadway
Curt E. H. Nicholai, 103 E. 111th st
Charles H. Nichols, Bloomingdale Asylum
James E. Nichols, 162 E. 37th street
Henry D. Nicoll, 51 E. 57th street
John G. Noble, 258 W. 25th street
Felix Nordeman, 210 E. 60th street
Henry S. Norris, 104 W. 34th street
Wm. P. Northup, 57 E. 79th street
Henry D. Noyes, 233 Madison av
Herman Obbarius, 61 Second street
Joseph O'Dwyer, 858 Lexington av
Frank W. Olds, 63 W. 38th street
Charles E. Olmstead, 212 W. 32d st
Henry S. Oppenheimer, 49 E. 23d st
Isaac Oppenheimer, 155 E. 56th st
Richard J. O'Sullivan, 156 Alexander avenue
Fessenden N. Otis, 5 W. 50th street
William K. Otis, 5 W. 50th street
Charles W. Packard, 447 Park av
R. C. M. Page, 31 W. 33d street
Charles I. Pardee, 34 W. 38th street
Edward L. Pardee, 34 W. 38th street
John Parsons, Kingsbridge, N. Y.
Ralph L. Parsons, 21 E. 44th street
Edward L. Partridge, 19 Fifth av
Edward C. Passmore, 159 E. 77th st
F. N. Patterson, 247 E. 33d street
Marie B. Patterson, 128 Second av
S. M. Payne, 266 Madison avenue
George L. Peabody, 57 W. 38th st
Edward H. Peaslee, 29 Madison av
Edward Sprague Peck, 53 W. 50th st
Eli J. Peck, 29 E. 46th street
Grace Peckham, 38 E. 25th street
Henry T. Peirce, 272 Lenox avenue
Frank K. Perkins, 356 W. 14th st
Alexander Perry, 138 W. 44th street
John G. Perry, 48 E. 34th street
George A. Peters, 12 W. 29th street
John C. Peters, 83 Madison avenue
Frederick Peterson, 34 E. 21st street
Alfred G. Pfeiffer, 227 E. 53d street
Joseph Pfeiffer, 130 E. 62d street
A. M. Phelps, 133 W. 34th street
Charles E. Phillips, 82 E. 121st st
Wendell C. Phillips, 161 E. 37th st
Henry G. Piffard, 10 W. 35th street
Francis Pinner, 73 Rivington street
Wm. M. Polk, 7 E. 36th street
S. Pollitzer, 306 W. 33d street
Oren D. Pomeroy, 316 Lexington av
Thomas R. Pooley, 107 Madison av
Charles T. Poore, 5 W. 30th street
Alex. B. Pope, 126 W. 45th street
Seneca D. Powell, 27 W. 37th street
Charles A. Powers, 18 E. 24th street
Adolph Pramann, 251 E. 85th street
Isaiah F. Pray, 115 W. 34th street
C. Prince, 11 W. 45th street
Wm. J. Purcell, 73 W. 84th street
Alfred E. M. Purdy, 304 Madison av
Leopold Putzel, 252 E. 48th street
Charles E. Quimby, 44 W. 36th st.
M. G. Raefle, 112 E. 10th street
E. B. Ramsdell, 581 Lexington av
Edwin D. Ramsdell, 158 E. 33d st

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Ambrose L. Ranney, 156 Madison av
Henry Raphael, 213 E. 48th street
Samuel Rapp, 352 E. 50th street
W. H. Rassman, 70 W. 92d street
Ira B. Read, 18 E. 126th street
Adrian Y. Reid, 100 Lexington av
John J. Reid, 853 Lexington av
Isaac H. Reily, 168 W. 23d street
Pio Rengifo, 216 W. 45th street
Frederick T. Reyling, 355 W. 32d st
Meyer L. Rhein, 104 E. 58th street
Clarence C. Rice, 115 E. 18th street
Huntington Richards, 19 E. 38th st
H. I. Richardson, 79 Washington pl
W. H. Richardson, 79 Washington pl
John Ridlon, 337 W. 57th street
Frank W. Ring, 101 Park avenue
J. H. Ripley, 605 Lexington avenue
Milton J. Roberts, 105 Madison av
Nathan S. Roberts, 149 E. 62d st
S. M. Roberts, 225 W. 44th street
Thomas S. Robertson, 28 E. 20th st
A. R. Robinson, 248 W. 42d street
Beverley Robinson, 37 W. 35th street
Fred. C. Robinson, 221 W. 11th st
A. D. Rockwell, 113 W. 34th street
Louis A. Rodenstein, St. Nicholas av and 155th street
Trangott F. M. Roediger, 312 W. 35th street
Willard H. Rogers, 225 W. 22d street
DeWitt C. Romaine, 473 Hudson st
Stephen W. Roof, 223 W. 23d street
D. B. St. John Roosa, 20 E. 30th street
J. West Roosevelt, 32 E. 31st street
Achilles Rose, 208 Second avenue
E. Rosenberg, 784 Lexington avenue
James Ross, 347 W. 32d street
Charles Roth, 231 E. 58th street
Alvah Rowe, 410 W. 34th street
Julius Rudisch, 117 E. 59th street
Adolph Rupp, 406 W. 34th street
Earnest F. Ruppe, 162 Prince street
Gustavus A. Sabine, 8 E. 24th street
B. Sachs, 112 E. 61st street
Charles W. Sanders, 53 E. 53d street
Joseph A. Sanders, 249 W. 42d street
Luis F. Sass, 56 W. 39th street
E. F. Leroy Satterlee, 21 W. 19th st
Thos. E. Satterthwaite, 17 E. 44th st
R. H. Saunders, 791 Madison avenue
Lewis A. Sayre, 285 Fifth avenue
Lewis H. Sayre, 285 Fifth avenue
A. Schapringer, 6 St. Mark's place
Barnim Scharlau, 111 E. 23d street
Julius Scheider, 187 E. 64th street
Phillip Scheu, 440 E. 16th street
Joseph Schmitz, 97 Allen street
Joseph Schnetter, 13 E. 41st street
Charles P. R. Schoenemann, 340 Lexington avenue
L. Schöney, 324 E. 72d street
Warren Schoonover, 115 E. 59th street
Charles Schram, 344 E. 84th street
Edward F. Schwedler, 155 W. 34th st
George M. Schweig, 214 E. 69th street
George Scott, 640 Madison avenue
Charles D. Scudder, 1 E. 33d street
Louis L. Seaman, 18 W. 31st street
William S. Seamans, 71 E. 55th street
Byron H. Searing, 353 W. 28th street
Henry T. Sears, 257 W. 52d street
B. Segnitz, 149 E. 63d street
Edward C. Seguin, 419 Madison ave
August Seibert 41 Seventh street
Frederick S. Sellew, 53 E. 79th street
Walter D. Sewell, 320 Lexington ave
Samuel Sexton, 12 W. 35th street
Newton M. Shaffer, 28 E. 38th street
Eben S. D. Shaw, 158 Madison avenue
Frank E. E. Shaw, 155 E. 90th street
George F. Shrady, 247 Lexington ave
John Shrady, 66 W. 126th street
Reuben C. Shultz, 178 E. 76th street
Edward V. Silver, 103 W. 72d street
H. M. Silver, 8 E. 3d street
Lewis M. Silver, 56 E. 34th street
Charles E. Simmons, 742 Lexington av
William K. Simpson, 175 E. 71st st
Joseph Simrock, 64 E. 12th street
H. Marion Sims, 267 Madison avenue
George V. Skiff, 313 W. 54th street
Winslow W. Skinner, 170 W. 64th st
A. Alexander Smith, 40 W. 47th street
Andrew H. Smith, 22 E. 42d street
Franklin Smith, 180 Grand street

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Gouverneur M. Smith, 14 E. 17th st
J. Lewis Smith, 64 W. 56th street
Oscar G. Smith, 130 Washington place
Hanbury S. Smith, 33 Union square
Walter H. Snow, 33 E. 28th street
George A. Spalding, 3 E. 125th street
J. H. Spann, 614 Fifth avenue
Louis Spannhake, 129 E. 17th street
H. Draper Speakman, 22 E. 35th st
Arnot Spence, 88 W. 71st street
Jacob Spillinger, 14 2d street
E. C. Spitzka, 712 Lexington avenue
Alfred R. Starr, 164 E. 91st street
M. Allen Starr, 22 W. 48th street
Henry S. Stark, 270 E. 7th street
Henry S. Stearns, 21 E. 44th street
Alexander W. Stein, 30 W. 15th street
Charles Stein, 33 Rivington street
Adelrich Steinach, 188 Second avenue
Charles H. G. Steinsieck, Riverside Hospital
Lassar Stern, 164 E. 81st street
John A. Steurer, 113 W. 45th street
George T. Stevens, 33 W. 33d street
William Stevens, 35 W. 38th street
George C. Stiebeling, 71 St. Mark's pl
Charles F. Stillman, 109 E. 18th street
Charles W. Stimson, 68 W. 40th street
Daniel M. Stimson, 11 W. 17th street
L. A. Stimson, 34 E. 33d street
G. Mozart Stoeckel, 361 W. 42d street
A. Russell Strachan, 25 E. 30th street
Ludwig Straus, 211 E. 13th street
Ransal M. Streeter, 27 W. 38th street
J. Watson Stronach, 265 W. 52d street
Frederick R. Sturgis, 16 W. 32d street
Arnold Sturmdorf, 245 E. 13th street
Gustave E. Sussdorf, 17 W. 26th street
Albert T. Swan, 317 E. 18th street
Edw. Swasey, 134 Manhattan avenue
John H. Swasey, 34 E. 28th street
Edwin Swift, Murray Hill Hotel
George M. Swift, 29 E. 31st street
William J. Swift, 40 E. 30th street
R. E. Swineburne, 128 W. 126th street
Robert B. Talbot, 102 W. 54th street
George W. Talson, 47 Seventh avenue
J. Oscroft Tansley, 28 W. 43d street
C. Fayette Taylor, 201 W. 54th street
Clarence O. Taylor, 1449 Lexington av
Henry L. Taylor, 201 W. 54th street
James B. Taylor, 220 E. 17th street
James R. Taylor, 234 E. 12th street
Robert Taylor, 58 Lexington avenue
Robert W. Taylor, 40 W. 21st street
Stephen V. Ten Eyck, 66 W. 92d st
Stanley D. Terry, 14 W. 34th street
Jacob Teschner, 120 E. 55th street
J. Clark Thomas, 107 W. 47th street
T. Gaillard Thomas, 600 Madison ave
Beverhout Thompson, 111 W. 43d st
W. Gilman Thompson, 49 E. 30th st
George S. Thomson, 70 W. 93d street
John C. Thomson, Jr., 1830 Lexington avenue
William H. Thomson, 7 W. 56th street
Joseph Tomlinson, 45 W. 30th street
Byron V. Tompkins, 102 W. 61st street
J. A. Tonner, Lotus Club
Frederick M. Townsend, 42 W. 21st st
Elmer Clark Tracey, 30 E. 126th street
John G. Truax, 17 E. 127th street
Henry Tuck, 442 Madison avenue
C. P. Tucker, 43 W. 26th street
Ernest F. Tucker, 49 E. 30th street
Edward G. Tuffs, 15 Oliver street
Marcus E. Tulley, 326 Lexington ave
Theodore K. Tuthill, 319 W. 18th st
George M. Tuttle, 48 W. 38th street
Henry H. Tyson, Jr., 47 W. 51st street
Ferd. C. Valentine, 215 W. 48th street
William A. Valentine, 50 W. 32d st
Francis Valk, 163 E. 37th street
Wm. W. Van Arsdale, 207 W. 56th st
S. O. Vander Poel, 47 E. 25th street
Richard VanSantvoord, 106 W. 122d st
W. W. Van Valzah, 40 E. 25th street
Wm. H. Van Wyck, 210 W. 38th st
Maus R. Vedder, 690 Madison avenue
W. H. Vermilye, 49 W. 127th street
H. N. Vineberg, 229 E. 60th street
Albert Volkenberg, 64 Rivington st
Benjamin F. Vosburg, 257 W. 11th st
Clinton Wagner, 107 Madison avenue
Edward Waitzfelder, 129 E. 56th st
Ralph Waldo, 215 W. 23d street

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Louis Waldstein, 450 Madison avenue
Henry F. Walker, 8 E. 30th street
Leroy P. Walker, 25 E. 24th street
Samuel S. Wallian, 119 E. 28th street
S. J. Walsh, 22 City Hall place
Walter J. Walsh, 54 W. 26th street
Luis P. Walton, 43 W. 31st street
Charles S. Ward, 18 W. 30th street
Edwin F. Ward, 33 W. 36th street
James E. Ward, 359 W. 62d street
O. J. Ward, 272 E. Broadway
Whitfield Ward, 128 E. 36th street
Fred. M. Warner, 836 Seventh avenue
Frederick M. Warner, 836 Seventh av
John W. Warner, 107 E. 72d street
John Warren, 47 E. 30th street
John S. Warren, 204 W. 38th street
Marshall L. Warrin, 112 E. 38th street
Claudius M. Warsaw, 1137 Madison av
John W. Warth, 253 Broome street
Wickes Washburne, 42 Irving place
Sigismund Waterman, 131 E. 59th st
Robert L. Watkins, 312 W. 145th st
Wm. S. Watson, 105 W. 47th street
Robert Watts, 49 W. 36th street
Z. Swift Webb, 342 W. 33d street
Leonard Weber, 25 W. 46th street
David Webster, 266 Madison avenue
Edgar T. Weed, 246 Lexington avenue
John E. Weeks, 43 W. 18th street
Robert F. Weir, 37 W. 32d street
Faneuil D. Weisse, 28 W. 20th street
Brooks H. Wells, 72 W. 45th street
Sara Welt, 232 E. 58th street
Edmund C. Wendt, 712 Madison ave
N. S. Westcott, 156 W. 12th street
Wm. H. Weston, 400 W. 22d street
George T. Wetmore, 62 Park avenue
Geo. D. Wheat, Chambers St. Hospital
E. D. Wheeler, Union League Club
John H. Wheeler, 319 W. 54th street
George G. Wheelock, 75 Park avenue
Wm. E. Wheelock, 50 Wall street
Francis V. White, 222 E. 31st street
John B. White, 941 Madison avenue
Octavus A. White, 222 2d avenue
W. V. White, 1522 Park avenue
Wm. T. White, 130 E. 30th street
Joseph Wiener, 150 E. 61st street
Daniel H. Wiesner, 212 E. 46th st.
Mark H. Williams, 257 W. 11th st.
George Williamson, 40 King street
Gustavus S. Winston, 42 W. 39th st.
W. Winterberg, 174 E. 72d street
Joseph E. Winters, 36 W. 32d street
L. Wischnewetzky, 110 E. 76th st.
Rudolph A. Witthaus, 61 5th avenue
Benjamin Wood, Jr., 846 E. 165th st.
E. C. Woodbury, 104 W. 48th street
J. V. S. Woolley, 75 E. 79th street
W. P. Woster, 423 W. 51st street
J. W. Wright, 53 W. 19th street
Peter B. Wyckoff, 23 W. 57th street
John A. Wyeth, 267 Madison avenue
W. Gill Wylie, 40 W. 40th street
G. H. Wynkoop, 5 E. 13th street
Leroy M. Yale, 432 Madison avenue
Wm. Young, 145 W. 42d street
A. P. Zemansky, 123 W. 39th street
Vincent Zolnowski, 33 W. 16th street

Number of Members, 1000.

NOTE.—The following deaths have occurred during the year.

Charles Bliss, Jan. 23, 1889
Herman M. Brandis, March 16, 1889
T. Malloch Cheesman, July, 1888
John C. Dalton, Feb. 12, 1889
Thomas F. Healey, Feb. 18, 1889
Charles G. Johnson, March 19, 1889
Alexander Hugart, 1888
John H. Leveridge, 1888
Maurice N. Miller, Dec. 8, 1888
N. R. Moseley, Feb. 10, 1889
James W. Ramsey, Feb. 28, 1889
Walter L. Ramsey, Aug. 17, 1888
Thomas T. Sabine, Aug. 23, 1888
Henry B. Sands, Nov. 18, 1888
William D. Schuyler, 1888
Reuben Smith, April 4, 1889
Henry Van Arsdale, Aug. 25, 1888
W. L. Wardwell, March 21, 1889
S. S. Wyckoff, Oct. 16, 1888

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NEW YORK ACADEMY OF MEDICINE.

No. 12 West Thirty-first street, New York.[1]

(Instituted, 1847. Incorporated, 1851.)

MEETINGS. — Stated meetings first and third Thusday evenings in the month, excepting July, August and September, at 12 West Thirty-first street, New York city; election of officers, first Thursday in January. Library open free to the public, from 10 A. M. to 10 P. M. In summer, 10 A. M. to 6 P. M.

Physicians in active practice for the three years last preceding the application and residents of the State of New York, are eligible for Resident Fellowship.

Surgeons in the U. S. Army, Navy, or Marine-Hospital Service, and physicians residing in other States, are eligible to Non-resident Fellowship.

Officers.

Alfred L. Loomis, President.
William H. Draper,
Andrew H. Smith,
D. B. St. John Roosa, } Vice-Presidents.
Arthur M. Jacobus, Recording Secretary.
Richard Kalish, Assistant Secretary.
Orlando B. Douglas, Treasurer.
M. Allen Starr, Corresponding Secretary.
Adoniram B. Judson, Statistical Secretary.
Charles H. Knight, Librarian.
John S. Brownne, Resident Librarian.
Laurence Johnson,
George A. Peters,
Everett Herrick,
Gouverneur M. Smith,
Abraham Jacobi, } Trustees.
Frederick A. Castle, Treasurer for the Trustees.
Alexander S. Hunter, Chairman Committee on Admissions.
D. Bryson Delavan, Chairman Committee on Library.

Delegates to State Medical Society to January, 1893:

Simon Baruch, Francke H. Bosworth, Henry C. Coe,
J. Henry Fruitnight, Francis P. Kinnicutt.

Resident Fellows (May, 1889).

(Where no town is mentioned New York is understood.)

Robert Abbe, 11 W. 50th street
Calvin T. Adams, 200 W. 55th street
Isaac Adler, 12 E. 60th street
David H. Agan, 363 Broome street
E. V. Agramonte, 435 W. 22d street
John S. Aitkin, 359 W. 30th street
Welcome T. Alexander, St. Nicholas avenue, W. 157th street
Charles S. Allen, 21 E. 28th street
Thomas H. Allen, 52 W. 45th street

[1] A new Academy building is in course of erection at Nos. 17–19 and 21 West Forty-third Street, New York.

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Royal W. Amidon, 18 W. 21st street
J. H. Anderson, 30 University place
William B. Anderton, 34 W. 47th st
Joseph A. Andrews, 39 W. 32d street
Lewis Arcularius, 121 E. 25th street
Jacob H. Asch, 770 Lexington ave
Morris J. Asch, 5 W. 30th street
August Assenheimer, 323 E. 51st st
Gorham Bacon, 63 W. 54th street
Thomas S. Bahan, 257 W. 14th st
A. Brayton Ball, 42 W. 36th street
Henry Balser, 606 E. 9th street
William Balser, 218 E. 13th street
L. Bolton Bangs, 127 E. 34th street
Fordyce Barker, 24 E. 38th street
Justin L. Barnes, 247 W. 52d street
J. W. Barstow, 136 Lexington ave
Simon Baruch, 47 E. 60th street
G. Bayles, 408 Main st., Orange, N. J.
Carl Beck, 187 Second avenue
F. E. Beckwith, New Haven, Conn.
Christopher M. Bell, 320 Fifth ave
A. C. Benedict, Yonkers, N. Y.
E. J. Bermingham, Cornwall on the Hudson
Hermann M. Biggs, 58 E. 25th street
John H. Billings, 249 Madison ave
C. E. Billington, 106 Madison ave
William R. Birdsall, 144 E. 74th st
William N. Blakeman, 28 W. 37th st
Mark Blumenthal, 20 E. 65th street
E. A. Bogue, 29 E. 20th street
H. J. Boldt, 245 W. 42d street
J. A. Booth, 25 W. 53d street
Rudolph O. Born, 131 W. 34th street
Francke H. Bosworth, 26 W. 46th st
Nathan Bozeman, 9 W. 31st street
Emil A. Bracklow, 408 W. 46th st
Edward Bradley, 19 W. 30th street
Laban L. Bradshaw, 154 E. 74th st
John W. Brannan, 54 W. 11th street
James A. Breakell, 354 W. 24th st
W. J. Brickelmaier, 24 W. 39th st
Nathan E. Brill, 805 Lexington ave
E. L. Macomb Bristol, 1500 Park ave
Edward B. Bronson, 123 W. 34th st
Abram Brothers, 102 Madison street
F. Tilden Brown, 40 E. 31st street
Sanger Brown, 173 Washington Ridge Road
Charles E. Bruce, 456 Lexington ave
Albert F. Brugman, 588 E 141st st
Edward F. Brush, Mt. Vernon, N. Y.
Joseph D. Bryant, 54 W. 36th street
John Bryne, 314 Clinton st, Brooklyn
Charles W. Büchler, 251 W. 45th st
Augustus H. Buckmaster, 163 Clinton street, Brooklyn
L. Duncan Bulkley, 4 E. 37th street
Charles S. Bull, 47 W. 36th street
Wm. T. Bull, 35 W. 35th street
William E. Bullard, 122 E. 40th st
William M. Bullard, 302 Madison ave
T. Hamilton Burch, 1 South Fifth ave
Thomas H. Burchard, 24 W. 40th st
Martin Burke, 147 Lexington ave
Frederick A. Burrall, 48 W. 17th st
Stephen S. Burt, 37 W. 32d street
George H. Butler, 42 E. 66th st
Augustus Caillé, 185 Second avenue
Robert A. Caldwell, 61 W. 50th st
Peter A. Callan, 35 W. 38th street
Edward M. Cameron, 22 W. 47th st
D. M. Cammann, 19 E. 33d street
Robert Campbell, 262 W. 23d street
William C. Campbell, 259 W. 42d st
A. R. Carman, 27 W. 127th street
Elon N. Carpenter, 113 Madison ave
Walter L. Carr, 54 W. 38th street
Joseph S. Carreau, 43 W. 21st street
Frederick A. Castle, 55 E. 52d street
Charles M. Cauldwell, 71 W. 55th st
Edwin R. Chadbourne, 31 W. 25th st
George W. Chamberlain, 439 Lexington avenue
Porter F. Chambers, 596 Lexington ave
Henry D. Chapin, 27 W. 51st street
Walter F. Chappell, 22 E. 42d street
Jean F. Chauveau, 31 W. 60th street
T. Matlack Cheesman, 46 E. 29th street
Juan Cisneros, 73 W. 36th street
W. Brewster Clark, 50 E. 31st street
Clement Cleveland, 59 W. 38th street
George D. Clift, 141 E. 16th street
Titus M. Coan, 110 E. 56th street

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David C. Cocks, 206 E. 116th street
Henry C. Coe, 987 Madison avenue
Stacy B. Collins, 106 E. 35th street
George S. Conant, 148 E. 18th street
Stephen G. Cook, 111 W. 12th street
J. Leonard Corning, 53 W. 38th st
L. V. Cortelyou, 520 10th st, Brooklyn
Edward O. Cowles, 629 Lexington ave
Henry E. Crampton, 256 W. 121st st
John J. Crane, New Haven, Conn.
Andrew F. Currier, 159 E. 37th st
Charles G. Currier, 75 W. 55th st
B. Farquhar Curtis, 35 W. 35th st
H. Holbrook Curtis, 118 Madison ave
Elizabeth M. Cushier, 53 E. 20th st
William F. Cushman, 325 W. 22d st
Gerge R. Cutter, 473 Bedford avenue, Brooklyn
John R. Cypert, 656 Lexington ave
Charles L. Dana, 50 W. 46th street
Samuel W. Dana, 313 W. 33d street
R. H. M. Dawbarn, 345 W. 56th st
Wm. B. DeGarmo, 56 W. 36th street
Francis Delafield, 12 W. 32d street
D. Bryson Delavan, 1 E. 33d street
Charles E. Denhard, 90 Madison st
Frederic S. Dennis, 21 E. 21st street
Richard H. Derby, 9 W. 35th street
S. Henry Dessau, 47 W. 56th street
William Detmold, 38 E. 9th street
Robert J. Devlin, 156 W. 13th street
J. Harvie Dew, 352 W. 54th street
Benj. F. Dexter, 140 W. 42d street
R. G. L. Dieffenbach, 224 E. 48th st
Thomas Dimock, 46 E. 30th street
George A. Dixon, 815 Madison ave
F. E. D'Oench, 25 E. 31st street
Wm. E. Dold, Bloomingdale Asylum
Michael Donnelly, 356 W. 30th st
John Dorning, 252 W. 25th street
John H. Douglas, 48 E. 26th street
Orlando B. Douglas, 123 E. 36th st
William H. Draper, 19 E. 47th st
A. Palmer Dudley, 640 Madison ave
Wm. F. Duncan, 123 W. 39th street
Ghislani Durant, 11 W. 39th street
John H. Eden, 2456 Valentine ave
Ellsworth Eliot, 48 W. 36th street
George R. Elliott, 48 E. 26th street
William S. Ely, Rochester, N. Y.
J. H. Emerson, 81 Madison avenue
Bache McE. Emmet, 18 E. 30th st
Thomas A. Emmet, 89 Madison ave
George A. Evans, 909 Bedford ave, Brooklyn
William A. Ewing, 205 W. 56th st
Henry A. Fairbairn, 213 McDonough street, Brooklyn, N. Y.
Warren A. Fanning, 115 W. 63d st
J. O. Farrington, 1991 Madison ave
William H. Farrington, Astor House
James F. Ferguson, 102 E. 57th st
Jose M. Ferrer, 35 E. 31st street
Thomas C. Finnell, 152 W. 128th st
Edward D. Fisher, 6 W. 39th street
Martin J. Fleming, 132 Lexington ave
William E. Forest, 105 Waverly pl
Frank P. Foster, 16 E. 31st street
Edward P. Fowler, 38 W. 40th street
George B. Fowler, 56 W. 50th street
George R. Fowler, 645 Marcy avenue, Brooklyn
George H. Fox, 18 E. 31st street
Edward Frankel, 217 E. 17th street
Gustav Frauenstein, 359 W. 15th st
J. Gordon Frazer, 321 W. 35th st
George C. Freeborn, 18 E. 41st st
Thomas R. French, 469 Clinton ave, Brooklyn, N. Y.
Wolff Freudenthal, 1042 Lexington avenue
Albert H. Fridenberg, 216 E. 60th st
Edward Fridenberg, 2021 Fifth ave
Alfred Friedman, 862 Lexington ave
David Froehlich, 230 E. 49th st
J. Henry Fruitnight, 161 W. 57th st
Jacobs Fuhs, 237 Hewes st, Brooklyn
Robert M. Fuller, 136 W. 42d street
Stephen E. Fuller, 77 Hanson place, Brooklyn, N. Y.
Guido Furman, 125 W. 73d street
Joseph J. Garmany, 64 W. 20th street
Henry J. Garrigues, 155 Lexington avenue
John P. Garrish, 400 W. 57th street
Arpad G. Gerster, 56 E. 25th street

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Virgil P. Gibney, 23 Park avenue
William Gilfillan, 98 Remsen street, Brooklyn, N. Y.
Walter R. Gillette, 149 W. 23d street
William C. Gilliam, 103 Park ave
John H. Girdner, 120 W. 35th street
Joseph Wm. Gleitsman, 117 Second avenue
Samuel Glueck, 167 E. 60th street
Augustin H. Goelet, 243 W. 54th st
James R. Goffe, 326 Lexington ave
David H. Goodwillie, 160 W. 34th st
Orren A. Gorton, Sherburne, Chenango Co., N. Y.
Egbert H. Grandin, 109 E. 54th st
Frank Grauer, 326 W. 46th street
Landon Carter Gray, 6 E. 49th st
Henry Griswold, 42 W. 35th street
Emil Gruening, 109 E. 23d street
Bernhard Grunhut, 83 Clinton place
John Habirshaw, 260 W. 57th street
Alexander Hadden, 155 E. 51st st
Edwards Hall, 17 E. 66th street
Richard J. Hall, 17 E. 49th street
William H. Hall, 129 E. 54th street
Allen McLane Hamilton, 20 E. 29th st
Graeme M. Hammond, 58 W. 45th st
Irwin H. Hance, 441 Park avenue
Horace T. Hanks, 55 E. 59th street
George T. Harrison, 221 W. 23d st
Edward C. Harwood, 44 W. 49th st
James R. Hayden, 18 W. 16th street
George D. Hays, 324 E. 50th street
Henry N. Heineman, 49 W. 57th st
Charles Heitzman, 39 W. 45th street
J. Julio Henna, 125 E. 25th street
Morris H. Henry, 581 Fifth avenue
Neil J. Hepburn, 369 W. 23d street
Fred C. Heppenheimer, 112 E. 57th st
Edgar M. Hermance, Yonkers, N. Y.
Everett Herrick, 126 Madison ave
Christian A. Herter, 839 Madison ave
Charles F. Heywood, Pelhamville, Westchester Co., N. Y.
George B. Hickok, 242 E. 12th street
Thos. J. Hillis, 51 Charlton street
John H. Hinton, 41 W. 32d street
Urban G. Hitchcock, 51 W. 29th st
Abbott Hodgman, 141 E. 38th street
Edward J. Hogan, 308 Madison st
William F. Holcombe, 54 E. 25th st
L. Emmett Holt, 15 E. 54th street
Oscar P. Honegger, 155 E. 72d street
George G. Hopkins, 350 Washington avenue, Brooklyn, N. Y.
Joseph W. Howe, 32 W. 24th street
Robert T. Howe, Mt. Vernon, N. Y.
Samuel T. Hubbard, 27 W. 9th st
Francis Huber, 113 East Broadway
Joseph J. Hull, 158 W. 34th street
Wm. A. Hume, 82 E. 79th street
George H. Humphreys, 23 E. 47th st
Alexander S. Hunter, 32 E. 29th st
James B. Hunter, 55 W. 36th street
Francis Hustace, 413 Madison ave
Nathaniel C. Husted, Tarrytown, N. Y.
Frederick E. Hyde, 20 W. 53d street
John B. Isham, 1055 Lexington ave
Frank L. Ives, 117 E. 30th street
Frank W. Jackson, 12 W. 18th st
George F. Jackson, 482 W. 153d st
George T. Jackson, 14 E. 31st street
William H. Jackson, 556 Madison ave
Abraham Jacobi, 110 W. 34th st
Mary Putnam Jacobi, 110 W. 34th st
Arthur M. Jacobus, 131 W. 48th st
George W. Jacoby, 100 E. 58th street
Edward H. Janes, 208 W. 42d street
Edward G. Janeway, 51 E. 25th st
Joseph E. Janvrin, 191 Madison ave
William C. Jarvis, 25 E. 31st street
Charles Jewett, 307 Gates avenue, Brooklyn, N. Y.
John G. Johnson, 153 Joralemon st, Brooklyn, N. Y.
Laurence Johnson, 363 W. 28th st
Charles N. D. Jones, 163 DeKalb ave, Brooklyn, N. Y.
S. Seabury Jones, 809 Lexington ave
Wm. W. Jones, 51 W. 28th street
Adoniram B. Judson, 4 E. 25th street
C. H. Judson, Dobb's Ferry, N. Y.
Richard Kalish, 50 W. 36th street
W. H. Katzenbach, 22 W. 45th street
Thos. J. Kearney, 107 Lexington ave
Theodore H. Kellogg, 48 W. 36th st

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William M. Kemp, 267 W. 23d street
William C. Kennedy, 167 W. 34th st
Edward Kershner, Surgeon U. S. Navy, 2 Chambers street
Samuel Ketch, 328 W. 29th street
Edward L. Keyes, 1 Park avenue
Francis P. Kinnicutt, 42 W. 37th st
J. M. W. Kitchen, 168 E. 58th street
Gideon L. Knapp, 42 W. 21st street
Herman Knapp, 25 W. 24th street
John B. Knapp, 40 W. 48th street
Charles H. Knight, 20 W. 31st street
George Knipe, 354 W. 24th street
Samuel Kohn, 219 Second avenue
Henry Koplik, 175 E. 70th street
Carl F. Kremer, 94 Second avenue
Paul H. Kretzschmar, 402 Washington ave, Brooklyn, N. Y.
Wm. H. Kretzschmar, 147 Fulton ave, Brooklyn, N. Y.
Edward W. Lambert, 2 E. 37th street
Gustav Langman, 115 W. 57th street
Charles A. Leale, 604 Madison ave
James R. Leaming, 18 W. 38th street
Charles C. Lee, 79 Madison avenue
Egbert LeFevre, 161 W. 23d street
George M. Lefferts, 6 W. 33d street
Simeon N. Leo, 103 W. 55th street
George W. Leonard, 107 W. 73d st
Wm. M. Leszynsky, 636 Lexington avenue
Adolph M. Lesser, 311 E. 50th street
Daniel Lewis, 62 Park avenue
Fred. W. Lilienthal, 306 E. 15th st
Rufus P. Lincoln, 22 W. 31st street
Charles L. Lindley, 85 Madison ave
Watts C. Livingston, 357 W. 30th st
Arthur V. B. Lockrow, 7th avenue and 122d street
Charles E. Lockwood, 59 W. 36th st
George R. Lockwood, 30 E. 35th st
Alfred L. Loomis, 19 W. 34th street
Henry P. Loomis 58 E. 34th street
William T. Lusk, 47 E. 34th street
Patrick J. Lynch, 216 E. 13th street
Samuel K. Lyon, 312 Second avenue
Frederick A. Lyons, 340 Lexington av
Charles McBurney, 40 W. 36th street
John A. McCorkle, 149 Clinton street, Brooklyn
Andrew J. McCosh, 600 Madison ave
John A. McCreery, 350 Lexington av
T. J. McGillicuddy, 125 E. 83d street
Burnett C. McIntyre, 221 W. 4th st
W. Duncan McKim, 751 Madison ave
Wm. M. McLaury, 244 W. 42d street
Malcolm McLean, 31 E. 126th street
S. B. Wylie McLeod, 247 W. 23d st
John B. McMahon, 266 E. Broadway
N. G. McMaster, 322 E. 15th street
George McNaughton, 216 Greene ave, Brooklyn
Sarah J. McNutt, 265 Lexington ave
Alex. E. McDonald, City Asylum (Ward's Island)
Geo. A. McDonald, 267 Seventh st
J. R. MacGregor, 1037 Madison ave
Ami J. Magnin, 48 E. 30th street
Henry A. Mandeville, 24 W. 40th st
Thomas H. Manley, 302 W. 53d st
Francis H. Markoe, 20 W. 30th st
Thomas H. Markoe, 20 W. 30th st
T. Dwight Martin, 528 E. 161st st
John J. Mason, 51 Prospect street, Providence, R. I.
Lewis D. Mason, 171 Joralemon st, Brooklyn
R. Osgood Mason, 170 W. 59th street
E. A. Maxwell, 214 E. 50th street
Charles H. May, Madison ave, and 59th street
Abraham Mayer, 245 E. 48th street
Alfred W. Maynard, 260 W. 42d st
Walter Mendelson, 179 W. 74th st
Frank W. Merriam, 11 Charlton st
Alfred Meyer, 748 Madison avenue
Willy Meyer, 105 E. 59th street
Robert Milbank, 154 W. 48th street
John J. Milhau, 41 Lafayette place
Henry B. Millard, 4 E. 41st street
Charles Milne, 124 E. 45th street
John C. Minor, 10 E. 41st street
Ramon L. Miranda, 54 W. 37th street
Hubbard W. Mitchell, 747 Madison avenue
Wm. F. Mittendorf, 140 Madison ave

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Henry Moeller, 240 W. 38th street
Joseph A. Monell, 236 W. 22d street
W. Oliver Moore, 128 Madison ave
Benjamin Morjé, 181 E. 71st street
Stuyvesant F. Morris, 16 E. 30th st
P. Albert Morrow, 66 W. 40th street
W. J. Morton, 36 W. 56th street
Gustave Mourraille, 84 W. 12th st
Paul F. Mundé, 20 W. 45th street
John P. Munn, 18 W. 58th street
Charles P. Murray, La Manda Park, Los Angeles County, Cal.
Frank W. Murray, 38 E. 36th street
Robert A. Murray, 235 W. 23d street
Charles E. Nammack, 142 Henry st
Wm B. Neftel, 16 E. 48th street
Albert W. Neufield, 237 E. Broadway
Charles H. Nichols, Bloomingdale Asylum, Boulevard and 117th st
James A. Nichols, 135 Lexington ave
James E. Nichols, 456 Lexington ave
Truman Nichols, 267 E. Broadway
Henry D. Nicoll, 51 W. 57th street
J. R. Nilson, 9 E. 53d street
John G. Noble, 222 W. 34th street
Henry S. Norris, 104 W. 34th street
Wm. P. Northrup, 57 E. 79th street
Henry D. Noyes, 233 Madison ave
Joseph O'Dwyer, 967 Lexington ave
Robert Offenbach, 825 Lexington ave
Francis W. Olds, 44 W. 71st street
Henry S. Oppenheimer, 49 E. 23d st
Samuel H. Orton, 143 E. 21st street
Fessenden N. Otis, 5 W. 50th street
Charles W. Packard, 447 Park ave
R. C. M. Page, 31 W. 33d street
Charles I. Pardee, 34 W. 38th street
Willard Parker, 8 W. 18th street
Edward L. Partridge, 19 Fifth ave
George L. Peabody, 57 W. 38th street
Edward H. Peaslee, 29 Madison ave
Edward S. Peck, 53 W. 50th street
Grace Peckham, 25 Madison avenue
Henry T. Peirce, 272 Lenox avenue
James L. Perry, 79 W. 47th street
John G. Perry, 48 E. 34th street
George A. Peters, 12 W. 29th street
John C. Peters, 83 Madison avenue
Frederick Peterson 34 E. 21st street
A. M. Phelps, 133 W. 34th street
Wendell C. Phillips, 161 E. 37th st
Henry G. Piffard, 10 W. 35th street
Wm. M. Polk, 7 E. 36th street
Oren D. Pomeroy, 316 Lexington ave
Thomas R. Pooley, 107 Madison ave
Charles T. Poore, 5 W. 30th street
Alexander B. Pope, 126 W. 45th st
P. Brynberg Porter, 8 W. 35th street
Seneca D. Powell, 12 W. 40th street
Charles A. Powers, 18 E. 24th street
Jonathan S. Prout, 26 Schermerhorn street, Brooklyn, N. Y.
T. Mitchell Prudden, 23 W. 33d st
Alfred E. M. Purdy, 304 Madison ave
Samuel S. Purple, 36 W. 22d street
Leopold Putzel, 252 E. 48th street
John D. Quackenbos, 331 W. 28th st
Charles E. Quimby, 44 W. 36th street
George W. Rachel, 328 E. 19th street
Edwin D. Ramsdell, 158 E. 33d street
Ambrose L. Ranney, 156 Madison ave
Ira B. Read, 18 E. 126th street
John J. Reid, 853 Lexington avenue
Meyer L. Rhein, 104 E. 58th street
Clarence C. Rice, 115 E. 18th street
Montrose R. Richards, 68 E. 127th st
John Ridlon, 337 W. 57th street
Frederick C. Riley, 38 E. 26th street
Frank W. Ring, 101 Park avenue
John H. Ripley, 605 Lexington ave
Milton J. Roberts, 105 Madison ave
Nathan S. Roberts, 149 E. 62d street
Stephen M. Roberts, 225 W. 44th st
Andrew R. Robinson, 248 W. 42d st
Beverley Robinson, 37 W. 35th street
George W. Robinson, 140 W. 36th st
Thomas M. Rochester, 2 St. James place, Brooklyn, N. Y.
Alphonso D. Rockwell, 113 W. 34th street
Louis A. Rodenstein, 155th st and St. Nicholas Avenue
Willard H. Rogers, 225 W. 22d street
Stephen W. Roof, 223 W. 23d street
D. B. St. John Roosa, 20 E. 30th st
J. W. Roosevelt, 32 E. 31st street

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Alvah Rowe, 410 W. 34th street
Julius Rudisch, 117 E. 59th street
Adolph Rupp, 406 W. 34th street
Gustavus A. Sabine, 8 E. 24th street
Barney Sachs, 112 E. 61st street
Edward Sanders, 126 E. 82d street
Joseph A. Sanders, 260 W. 42d street
Louis F. Sass, 56 W. 39th street
F. LeRoy Satterlee, 21 W. 19th st
Thos. E. Satterthwaite, 17 E. 44th st
Lewis A. Sayre, 285 Fifth avenue
Lewis Hall Sayre, 285 Fifth avenue
Reginald H. Sayre, 285 Fifth avenue
Barnim Scharlau, 111 E. 23d street
Julius Scheider, 188 E. 64th street
John Schmitt, 125 Second avenue
Charles P. R. Schoenemann, 340 Lexington avenue
Henry Schweig, 26 E. 20th street
George Scott, 640 Madison avenue
Charles D. Scudder, 1 E. 33d street
Louis L. Seaman, 18 W. 31st street
Wm. S. Seamans, 71 E. 55th street
Edward C. Seguin, 419 Madison av
August G. Seibert, 122 E. 17th street
Samuel Sexton, 12 W. 35th street
Newton M. Schaffer, 28 E. 38th st
Eben S. D. Shaw, 158 Madison av
George P. Shirmer, 359 W. 42d st
George F. Shrady, 247 Lexington av
John Shrady, 66 W. 126th street
Henry M. Silver, 8 E. 3d street
Chas. E. Simmons, 743 Lexington av
H. Marion Sims, 267 Madison av
Alex. J. C. Skene, 167 Clinton st, Brooklyn, N. Y.
Abram A. Smith, 40 W. 47th street
Andrew H. Smith, 22 E. 42d street
George DeF. Smith, 134 E. 18th st
Gouverneur M. Smith, 14 E. 17th st
J. Lewis Smith, 64 W. 56th street
Oscar G. Smith, 130 Washington pl
Stephen Smith, 574 Madison avenue
S. Hanbury Smith, 33 Union square
Samuel W. Smith, 24 W. 30th street
Lewis H. Spannhake, 129 E. 17th st
H. Draper Speakman, 22 E. 35th st
S. Fleet Spier, 162 Montague street, Brooklyn, N. Y.
M. Allen Starr, 22 W. 48th street
Thomas L. Stedman, 53 E. 57th st
Alexander W. Stein, 30 W. 15th st
Wm. Stevens, 68 W. 36th street
Charles F. Stillman, 109 E. 18th street
Charles W. Stimson, 68 W. 40th st
Daniel M. Stimson, 11 W. 17th st
Lewis A. Stimson, 34 E. 33d street
A. Russell Strachan, 25 E. 30th st
Francis H. Stuart, 123 Joralemon st, Brooklyn
Wm. Stubenbord, 319 W. 37th street
Frederic R. Sturgis, 16 W. 32d street
Gustavus E. Sussdorf, 18 E. 32d st
Wm. F. Swalm, 118 Lafayette ave, Brooklyn, N. Y.
John H. Swasey, 34 E. 28th street
Samuel Swift, Yonkers, N. Y.
Parker Syms, 140 Madison avenue
Charles F. Taylor, 201 W. 54th st
Henry L. Taylor, 201 W. 54th street
James R. Taylor, 234 E. 12th street
Robert W. Taylor, 40 W. 21st
T. Gaillard Thomas, 600 Madison av
William G. Thompson, 49 E. 30th st
William H. Thomson, 7 W. 56th st
William Thurman, 517 Madison ave
Arthur B. Townshend, 39 W. 32d st
E. Clark Tracy, 30 E. 126th street
Carlos P. Tucker, 43 W. 26th street
James P. Tuttle, 136 W. 41st street
Henry Van Arsdale, 53 E. 7th street
Wm. W. Van Arsdale, 207 W. 56th st
Edward Vander Poel, 228 E. 68th st
John Vander Poel, 36 W. 39th street
S. O. Vander Poel, 47 E. 25th street
Waldron B. Vander Poel, 106 E. 24th street
Moses D. Van Pelt, 234 W. 51st st
R. Van Santvoord, 106 W. 122d st
W. W. Van Valzah, 40 E. 25th st
Edward H. Van Winkle, 25 W. 9th st
Maus R. Vedder, 690 Madison ave
Clinton Wagner, 107 Madison ave

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Ralph Waldo, 215 W. 23d street
Louis Waldstein, 450 Madison ave
D. Ernest Walker, 309 W. 30th st
L. Pope Walker, 25 E. 24th street
William Wallace, 183 Congress st, Brooklyn
Joseph G. Wallach, 159 E. 62d street
Edwin F. Ward, 33 W. 36th street
Everett S. Warner, 117 E. 26th street
John W. Warner, 107 E. 72d street
John Warren, 47 E. 30th street
John S. Warren, 204 W. 38th street
Z. Swift Webb, 342 W. 33d street
Leonard Weber, 25 W. 46th street
David Webster, 266 Madison avenue
John E. Weeks, 43 W. 18th street
Robert F. Weir, 37 W. 33d street
Faneuil D. Weisse, 51 W. 22d street
Ovid P. Wells, 318 W. 20th street
Edmund C. Wendt, 712 Madison ave
Frank E. West, 24 Clinton street, Brooklyn, N. Y.
Benjamin F. Westbrook, 174 Clinton street, Brooklyn, N. Y.
George G. Wheelock, 75 Park avenue
Charles B. White, 135 W. 73d street
Francis V. White, 222 E. 31st street
J. Blake White, 941 Madison avenue
Octavius A. White, 222 Second ave
William T. White, 130 E. 30th street
Joseph Wiener, 150 E. 61st street
Rudolph G. Wiener, 806 Lexington av
Reynold W. Wilcox, 690 Madison av
Herbert F. Williams, 450 Classon av, Brooklyn, N. Y.
Mark H. Williams, 257 W. 11th st
Gustavus S. Winston, 42 W. 39th st
Joseph E. Winters, 36 W. 32d street
Charles S. Wood, 171 W. 47th street
Wm. B. Wood, 17 E. 38th street
Edward C. Woodbury, 104 W. 48th st
J. McGaw Woodbury, 120 Fifth ave
J. Williston Wright, 53 W. 19th st.
F. W. Wunderlich, 165 Remsen st, Brooklyn, N. Y.
John A. Wyeth, 267 Madison avenue
Robert H. Wylie, 215 W. 43d street
W. Gill Wylie, 40 W. 40th street
Leroy M. Yale, 432 Madison avenue
Charles E. Young, 334 W. 59th street
William Young, 145 W. 42d street

Number of Fellows, 574

MEDICAL SOCIETY OF THE COUNTY OF NIAGARA.

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in January; quarterly, first Tuesday in April and September.

Officers. (June 5, 1888.)

T. B. Cosford, President.
W. McChesney, Vice-President.
F. J. Baker, Secretary.
John Foote, Treasurer.

Censors: Wm. B. Gould, T. B. Cosford, F. J. Baker, Walter McChesney, H. A. Wilmot.

Committee on Hygiene.

M. S. Kittinger, Chairman. A. G. Skinner, A. N. Moore,
H. A. Wilmot, T. B. Cosford, M. L. Lang,
J. I. McFadden, J. W. Corman, W. Q. Huggins,
F. J. Baker.

Delegates to State Medical Society: Clinton A. Sage, D. H. Murphy.

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Members.

F. J. Baker, Lockport
Lafayette Balcolm, Lockport
John W. Bickford, Lockport
Gardner C. Clark, Niagara Falls
Simeon T. Clark, Lockport
J. W. Cole, Newfane
John W. Corman, Beach Ridge
T. B. Cosford, Lockport
Rexford Davison, Lockport
G. W. Eddy, Lewiston
Peter Faling, Gasport
Wm. J. Falkner, Youngstown
John Foote, Lockport
F. Gaskill, Wilson
Wm. B. Gould, Lockport
D. W. Harrington, Lockport
J. B. Hartwell, Lockport
J. H. Helmer, Lockport
H. C. Hill, Lockport
John B. Hoyer, Middleport
W. Q. Huggins, Sanborn
M. S. Kittinger, Lockport
M. L. Lang, Suspension Bridge
Walter McChesney, Barker's
J. I. McFadden, Olcott
B. E. Manchester, Royalton
A. N. Moore, Rapids Bridge
D. H. Murphy, Royalton
C. N. Palmer, Lockport
W. J. Ransom, Lockport
Wm. C. Raymond, Cambria
W. B. Rice, Lockport
Clinton A. Sage, Pekin
A. G. Skinner, Youngstown
E. Smith, Lewiston
C. H. Turner, Hartland
H. A. Wilmot, Middleport

Number of Members, 37.

MEDICAL SOCIETY OF THE COUNTY OF ONEIDA.

MEETINGS.—Annual, second Tuesday in July; semi-annual, second Tuesday in January; quarterly, second Tuesday in October and April. The semi-annual meeting is held in Rome; the others in Utica.

Officers. (July 10, 1888.)

Claude Wilson, President.
Wilbur H. Booth, Vice-President.
J. H. Glass, Secretary.
H. G. Jones, Treasurer.
J. G. Kilbourn, Librarian.

Censors: A. Churchill, M. C. West, Charles W. Pilgrim, Smith Baker, W. B. Palmer, Wm. M. Gibson.

Committee on Hygiene: J. A. Armstrong, Lafayette Rinkle, G. A. Blumer, Edwin Evans.

Delegates to State Medical Society: T. M. Flandreau, J. H. Glass, H. G. Jones.

Members.

(Where no town is mentioned Utica is to be understood.)

E. P. Abbott, Oriskany
James A. Armstrong, Clinton
W. A. Babcock, Oriskany
Charles G. Bacon, Camden
Smith Baker, Whitestown
M. M. Bagg, 6 Pearl Street
D. A. Barnum, Cassville
A. A. Barrows, Clinton
F. M. Barrows, Clinton
Thomas J. Bergen, 93 John street

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David Bersee, Stanwix
G. A. Blumer, N. Y. State Lunatic Asylum
W. H. Booth, Rowland's building
A. J. Browne, Rowland's building
Wales Buell, Walesville
E. H. Bullock, New York Mills
William A. Burgess, 186 Genesee street
Martin Cavana, Oneida, Madison Co
J. K. Chamberlayne, 1 Steuben park
Alonzo Churchill, Parker block
Wallace Clark, 136 Park avenue
W. P. Cleveland, Waterville
Ira M. Comstock, New York Mills
Mathias Cook, 92 Columbia street
T. H. Cox, Lee Center
Delos A. Crane, Holland Patent
A. P. Dodge, Oneida Castle
James W. Douglass, Boonville
A. G. Doust, New Hartford
J. B. Drummond, Westmoreland
H. G. DuBois, Camden
D. C. Dye, Seneca block
Eliza M. Ellenwood, Rome
Edwin Evans, Rome
Thomas M. Flandreau, Rome
Henry Foord, Rome
W. E. Ford, 266 Genesee street
Charles E. Fraser, Rome
Charles E. Fraser, Jr., Rome
Jefferson C. Fraser, Lee
Robert Frazier, Camden
Earl D. Fuller, 66 Varick street
F. A. Gary, Vernon
Wm. M. Gibson, 90 Cornelia street
A. A. Gillette, Westernville
J. H. Glass, 246 Genesee street
Francis T. Gorton, Waterville
W. R. Griswold, New Hartford
Joseph V. Harberer, 23 Fayette street
Benjamin F. Haskins, Prospect
Thomas Hays, Deerfield, office, Utica
Robert H. Hews, North Western
A. L. Holden, 116 South street
Ira D. Hopkins, 25 Blandina street
David Hughes, Washington Mills
Henry R. Hughes, Clinton
J. G. Hunt, 192 Genesee street
Myron W. Hunt, Holland Patent
E. M. Hyland, Utica
Wm. H. James, 166 Genesee street
Herbert G. Jones, 224 Genesee street
J. D. Jones, Rowland's building
H. W. Jones, Waterville
Thomas Z. Jones, Waterville
Judson G. Kilbourn, Utica
George A. Krug, 220 Bleeker street
William Kuhn, Rome
W. J. Langworthy, New Hartford
E. J. Lawton, Rome
Joseph I. Lindsay, Clayville
James McCullough, Remsen
Juliette E. Marchant, Rome
W. R. Marsden, 108 Varick street
A. W. Marsh, Oriskany Falls
G. C. Maxon, Carlisle building
G. Leroy Menzie, Vernon
Charlotte L. Merrick, 27 Blandina st
Charles Munger, Knoxboro
William H. Nelson, Taberg
H. Nicholas, North Bay
Thomas G. Nock, Jr., Rome
John B. Nold, Boonville
L. F. Pattingill, Munson building
H. C. Palmer, 253 Genesee street
W. B. Palmer, 30 South street
Chas. W. Pilgrim, N. Y. S. Lunatic Asylum
Johnson Pillmore, Delta
H. N. Porter, New York Mills
Medina Preston, Sangerfield
Hamilton S. Quinn, Carlisle block
William S. Ralph, 26 Court street
Edwin W. Raynor, Horsey block
C. C. Reid, Rome
H. G. Reid, Westernville
Lafayette Rinkle, Boonville
D. H. Roberts, Trenton
Chas. P. Russell, 196 Genesee street
Wm. Russell, 196 Genesee street
W. J. Schuyler, 266 Genesee street
Geo. Seymour, 227 Genesee street
A. R. Simmons, 27 Cottage street
Hugh Sloan, 142 Columbia street
A. H. Smith, Camden

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Charles E. Smith, Whitestown
Walter Spicer, Oriskany
Edward J. Stevens, 183 Genesee st
Henry C. Sutton, Rome
Charles W. Shaver, Florence
L. Swarthout, Prospect
Chas. B. Tefft, 170 Genesee street
Louis A. Tourtellot, 40 Broad street
Wm. D. Towsley, Camden
F. P. Utley, Deansville
T. A. Vedder, 29 Oneida street
Chas. G. Wagner, N. Y. S. Lunatic Asylum
Charles G. Ward, Bridgewater
Charles R. Weed, Horsey building
Joseph E. West, 379 Genesee street
M. C. West, Rome
J. S. Whaley, Rome
E. G. Williams, Remsen
Claude Wilson, Waterville
Hiram K. Worden, Westmoreland

Number of Members, 124.

NOTE.—G. W. Cleveland died Dec. 4, 1884, æt. 76.
H. Dwight Gardner died Dec. 28, 1883, æt. 28.
Isaac Freeman died Dec. 2, 1885, æt. 76.
Walter Booth died Feb. 7, 1886, æt. 77.
Luther Guiteau died June 13, 1886, æt. 81.
Herbert Hastings died March 17, 1885, æt. 84.
Franz Steinman died Jan. 27, 1889, æt. 53.

MEDICAL SOCIETY OF THE COUNTY OF ONONDAGA.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, last Tuesday in January; quarterly, at such intermediate times as the Society may direct. All meetings are held in Syracuse.

Officers. (June 12, 1889.)

Henry L. Elsner, President.
G. L. Brown, Vice-President.
F. W. Sears, Secretary.
Margaret Stanton, Treasurer.
L. P. Deming, Librarian.

Censors: (None elected.)

Delegates to State Medical Society: H. L. Elsner, D. M. Totman, J. L. Heffron.

Censor of the College of Medicine, Syracuse, N. Y.: S. M. Higgins.

Members.

(Where the town is not mentioned Syracuse is to be understood.)

Robert Aberdein, 2 Greeley block
Henry A. Allen, Baldwinsville
W. J. Ayling, 34 Mulberry street
Levi Bartlett, Skaneateles
A. C. Benedict, 48 Montgomery st
C. E. Billington, 31 East Fayette st
Wm. B. Breed, 182 North Salina st
G. L. Brown, Euclid
U. Higgins Brown, 52½ Warren street
John W. Brown, Mottville
F. H. Butler, 43 Seymour street
James E. Carr, Jordan
B. F. Chase, East Syracuse.
G. P. Clark, 128 South Salina street
J. H. Coe, 192 East Genesee street
Geo. W. Cook, 8 Greyhound building
A. J. Dallas, 48 Warren street
L. P. Deming, 25 Montgomery street
O. G. Dibble, Pompey
Emory A. Didama, 112 South Salina st

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H. D. Didama, 112 South Salina st
F. O. Donohue, 54 South Clinton st
Gregory Doyle, 70 W. Genesee street
G. W. Draper, Geddes
J. P. Dunlap, 108 E. Genesee street
G. W. Earle, Tully
George W. Earll, Skaneateles
A. S. Edwards, 367 North Salina st
G. A. Edwards, Catharine cor. Lodi st
Samuel G. Ellis, 443 Irving street
H. L. Elsner, 308 North Salina street
M. B. Fairchild, 363 North Salina st
A. Blair Frazer, Elbridge
J. W. Fry, 1 Griffin block, Lock st
David Gilliland, Marcellus
J. H. Graves, 70 Gifford street
R. C. Hanchett, 3 Joy building
Carrie A. Hatch, 6 East Onondaga st
J. L. Heffron, 281 North Salina st
S. M. Higgins, Memphis
Mrs. E. J. Holcomb, 67 E. Fayette st
Nathan Jacobson, 114 South Salina st
W. R. Johnson, 19 Yates block
Joel G. Justin, 67 East Fayette street
J. V. Kendall, Baldwinsville
George R. Kinne, 209 Gifford street
E. A. Knapp, 117 Montgomery street
J. W. Knapp, Geddes
Jonathan Kneeland, South Onondaga
R. C. McLennan, 108 South Salina st
F. W. Marlow, 136 Jefferson street
Edwin R. Maxson, 208 Madison st
E. S. Maxson, 208 Madison street
W. H. Maynard, 86 Delaware street
Alfred Mercer, 40 Montgomery street
A. Clifford Mercer, 40 Montgomery st
A. P. Miller, Geddes
E. L. Mooney, 33 West Fayette st
J. A. Mowris, Lafayette
W. W. Munson, Otisco
E. S. Mumford, 74 East Fayette st
D. H. Murray, 138 Catharine street
Horace Nims, Manlius
Scott Owen, 27 Montgomery street
Israel Parsons, Marcellus
H. H. Pease, 38 Montgomery street
W. T. Plant, 18 Harrison street
J. D. Potter, Delphi
George M. Price, 118 Butternut st
H. B. Pritchard, Cicero
A. B. Randall, Liverpool
C. S. Roberts, 7 Clinton place
M. G. Rood, Onondaga
E. S. Sampson, North Syracuse
L. A. Saxer, N. Salina cor. Prospect av
I. H. Searl, 75 Warren street
F. W. Sears, 38½ Montgomery street
J. P. Shumway, 5 Emerson avenue
E. C. Skinner, East Syracuse
F. W. Slocum, Camillus
Clara Smith, 503 Warren street
Earl W. Smith, 61 Warren street
F. W. Smith, S. West cor. Gifford st
Wm. Manlius Smith, 29 Holland st
Margaret Stanton, 23 Montgomery st
F. H. Stephenson, 101 Warren st
F. A. Strong, Brewerton
H. P. Tolman, Onondaga Valley
N. R. Tefft, Onondaga
D. M. Totman, 29 Montgomery street
Van Dyke Tripp, Borodino
Eli Van De Warker, 104 E. Genesee st
John Van Duyn, 111 South Salina st
Lewis F. Weaver, 13 Green street
H. A. Weed, Jordan
James Whitford, Onondaga Valley
Hiram Wiggins, Elbridge
N. Wilbur, Fayetteville
B. P. Wright, Furnace street
C. F. Wright, 77 Warren street
H. B. Wright, Skaneateles

Number of Members, 101.

Honorary Member: Rev. E. G. Bush, Syracuse.

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MEDICAL SOCIETY OF THE COUNTY OF ONTARIO.

MEETINGS.—Annual, second Tuesday in July; quarterly, second Tuesday in October, January, and April.

Officers. (July 8, 1884.)

(This County Society has not communicated with the State Society since the date above given.)

J. H. Budd, President.
E. O. Hollister, Vice-President.
F. D. Vanderhoof, Secretary and Treasurer.
Delegate to State Medical Society: A. G. Cruttenden.

Members.

A. D. Allen, Gorham
D. S. Allen, Hall's Corners
J. H. Allen, Gorham
A. L. Behan, Canandaigua
B. F. Bennett, Canandaigua
F. R. Bently, Cheshire
J. H. Budd, Geneva
D. R. Burrell, Canandaigua
M. R. Carson, Canandaigua
W. M. Cheney, West Bloomfield
H. K. Clarke, Geneva
A. G. Cruttenden, Clifton Springs
J. F. Draper, Victor
H. M. Eddy, Geneva
G. E. Flood, Geneva
G. S. Gallagher, Naples
N. E. Grene, Honeoye
O. B. Hallenbeck, Canandaigua
J. B. Hays, Canandaigua
W. S. Hicks, Bristol
E. O. Hollister, East Bloomfield
John Hutchins, Cheshire
Nellie L. Keith, Geneva
C. O. Jackson, Victor
J. H. Jewett, Canandaigua
F. W. Mailler, Phelps
D. J. Mallery, Bristol
A. M. Mead, Victor
M. W. Nichols, Canandaigua
M. H. Picot, Geneva
J. K. Pratt, Manchester
E. B. Sayre, Allen's Hill
E. W. Simmons, Canandaigua
J. T. Smith, Canandaigua
W. T. Swart, Canandaigua
F. D. Vanderhoof, Phelps
G. H. Van Deusen, Gorham
F. F. Webster, East Bloomfield
L. F. Wilbur, Honeoye
Frank Wilson, Orleans

Number of Members, 40.

NOTE.—Dr. Harvey Jewett, of Canandaigua, died September 4, 1888.

MEDICAL SOCIETY OF THE COUNTY OF ORANGE.

(Organized July 1, 1806.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in October.

Officers. (June 5, 1888.)

William E. Douglas, President.
Gaslav Gartzmann, Vice-President.
Burke Pillsbury, Secretary.
H. H. Robinson, Treasurer.
Censors: F. D. Mills, Arthur Pell, John H. Thompson, D. G. Lippincott.

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Committee on Hygiene: H. H. Robinson, D. B. Smiley, John F. Howell.

Delegate to State Medical Society: John F. Howell, Burke Pillsbury.

Members.

William Beattie, Cornwall
George S. Bond, Washingtonville
J. C. Boyd, Monroe
H. K. Bradner, Monroe
W. B. Bradner, Warwick
S. G. Carpenter, Chester
T. D. Condict, Searsville
Avery Cook, Otisville
Clinton G. Cooley, Montgomery
William L. Cuddeback, Port Jervis
William E. Douglas, Middletown
S. D. Dubois, Blooming Grove
William B. Eager, Middletown
E. Ross Elliott, Montgomery
E. S. Elmer, Cornwall
Smith Ely, Newburgh
G. A. Emory, Middletown
A. P. Farries, Warwick
Gaslav Gartzmann, Newburgh
Alphaeus Goodman, Salisbury
A. M. Goodman, Jr., Salisbury
H. Hardenburgh, Port Jervis
John F. Howell, Newburgh
James H. Hunt, Port Jervis
A. J. Jessup, Goshen
D. G. Lippincott, Campbell Hall
Mrs. E. R. G. Myer, Turner's
F. D. Mills, Middletown
J. Moffat, Washingtonville
R. V. K. Montfort, Newburgh
Wm. J. Nelson, South Centreville
Arthur Pell, Goshen
J. B. Peters, Walden
B. Pillsbury, Middletown
H. A. Pooler, Goshen
Willis I. Purdy, West Town
H. H. Robinson, Goshen
A. C. Santee, Scotchtown
W. T. Seeley, Amity
D. B. Smiley, Middletown
C. P. Smith, Chester
M. C. Stone, Newburgh
W. C. Terry, Ridgebury
J. H. Thompson, Goshen
S. Van Etten, Port Jervis
Theodore Writer, Otisville

Number of Members, 46.

MEDICAL SOCIETY OF THE COUNTY OF ORLEANS.

(Organized January 8, 1873.)

MEETINGS. — Annual, first Thursday in November; semi-annual, first Thursday in May.

Officers. (May 1, 1888.)

E. P. Squier, President.
R. W. Smith, Vice-President.
E. M. Tompkins, Secretary and Treasurer.

Censors: John Taylor, James Chapman, J. F. Millard, E. P. Squier, William C. Bailey.

Delegate to State Medical Society: ——— ———.

Members.

E. R. Armstrong, Holley
William C. Bailey, Albion
R. W. Bamber, Carlton
T. R. Bamber, Carlton
Eugene E. Barnum, Waterport
James Chapman, Medina
Samuel R. Q. Cochran, Albion
Daniel Curtis, Jeddo
J. G. Dolley, Albion
W. F. Eaman, Gaines
Charles E. Fairman, Lydonville
Willard Fitch, Knowlesville

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John Jenkins, Shelby
F. L. June, Waterpoft
Tousley B. Lewis, Albion
J. F. Millard, Albion
R. W. Smith, Albion
E. P. Squier, Albion
J. H. Taylor, Holley
E. M. Tompkins, Knowlesville
H. C. Tompkins, Knowlesville
Mrs. Harriet N. Watson, Albion

Number of Members, 22.

NOTE.—H. W. Lewis, Albion, deceased.

MEDICAL SOCIETY OF THE COUNTY OF OSWEGO.

(Organized in 1821.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in December, at Oswego.

Officers. (June 12, 1888.)

Joseph W. Eddy, President.
E. F. Marsh, Vice-President.
Elvira Rainier, Recording Secretary.
Pascal M. Dowd, Corresponding Secretary.
C. G. Bacon, Treasurer.

Censors and Committee on Medical Ethics: R. N. Cooley, F. L. Harter, J. K. Stockwell, W. H. Loomis.

Delegates to State Medical Society: E. Frank Marsh, A. W. Green.

Members.

Dillon Acker, Hannibal
S. D. Andrews, Oswego Falls
C. G. Bacon, Fulton
C. J. Bacon, Camden
R. C. Baldwin, Volney
N. W. Bates, Central Square
D. D. Becker, Mexico
Strong M. Bennet, Mexico
W. J. Bulger, Oswego
J. Lyman Buckley, Sandy Creek
Henry W. Caldwell, Pulaski
C. C. P. Clark, Oswego
A. S. Coe, Oswego
R. N. Cooley, Hannibal Center
S. L. Cooley, Hannibal Center
William B. Coy, Fulton
L. J. Crockett, Sandy Creek
Gilson A. Dayton, Oswego
Byron Dewitt, Oswego
R. J. Dimon, Hastings
Pascal M. Dowd, Oswego
D. D. Drake, Central Square
Emory J. Drury, Phœnix
Joseph W. Eddy, Oswego
Joseph Gardner, Williamstown
Albert W. Green, Palermo
T. J. Green, Mexico
Nelson F. Hall, Fulton
A. P. Hamill, Phœnix
John E. Hamill, Phœnix
Vincent G. Hamill, Phœnix
Frank L. Harter, Parish
Cyrus Havens, Hannibal
Charles E. Heaton, Mexico
J. W. Huntington, Mexico
Mary K. Hutchings, Oswego
George P. Johnson, Mexico
Ira L. Jones, Minetto
S. T. Kingston, Oswego
Charles M. Lee, Fulton
Warren H. Loomis, Fulton
F. S. Low, Pulaski
C. Macfarlane, Oswego
E. Frank Marsh, Fulton
John H. Mease, Oswego
J. L. Moer, South Richland
George W. Nelson, Orwell
D. Pardee, Fulton

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Joseph Pero, West Amboy
H. D. C. Phelps, South Scriba
F. F. Potter, Cleveland
Elvira Rainier, Oswego
Alfred Rice, Hannibal
Charles W. Shaver, Vienna
George W. Snyder, Scriba
J. K. Stockwell, Oswego
A. L. Thompson, Sandy Creek
John B. Todd, Parish
W. C. Todt, Oswego
W. D. Towsley, Camden
Willis M. Wells, Oswego Falls
G. G. Whitaker, Oswego Falls

Number of Members, 62.

Honorary Members.

C. H. Butler, Oswego. J. C. Curtis, Fulton.
J. N. Kendall, Baldwinsville.

MEDICAL SOCIETY OF THE COUNTY OF OTSEGO.

MEETINGS.—Annual, third Tuesday in July, at Cooperstown; semi-annual, third Tuesday in January; quarterly, as directed at each regular meeting.

Officers. (July 17, 1888.)

B. A. Church, President.
E. J. Morgan, Vice-President.
H. D. Blanchard, Secretary.
H. Lathrop, Treasurer.

Committee on Hygiene: H. Lathrop, E. J. Morgan, W. B. Crane.

Delegates to State Medical Society: Nathan Smith, O. W. Peck.

Members.

Geo. A. Armstrong, Burlington Flats
Wilson T. Bassett, Cooperstown
B. E. Bishop, Garrattsville
A. D. Blakeley, Milford
H. D. Blanchard, Portlandville
Henry W. Boorn, Schenevus
Samuel H. Case, Oneonta
Meigs Case, Oneonta
Lorenzo B. Chapman, West Laurens
Charles H. Chesebro, Unadilla Forks
B. A. Church, Oneonta
H. H. Clapsaddle, Toddsville
W. B. Crane, Richfield Springs
George F. Eulter, Oneonta
J. D. Fitch, Schuyler's Lake
T. S. Fitch, East Springfield
M. L. Ford, Oneonta
Charles T. Fox, Garrattsville
John W. Greene, West Laurens
G. L. Halsey, Unadilla
H. T. Harris, Laurens
L. H. Hills, Binghamton
Ira Hix, East Worcester
E. E. Houghton, Schenevus
E. L. Johnson, Hartwick
D. R. Kenyon, Sherburne, Chenango Co
Horace Lathrop, Cooperstown
J. K. Leaning, Fly Creek
William H. Leonard, Worcester
W. R. Lough, Burlington Flats
D. B. Manchester, Oneonta
J. H. Martin, Otego
George Merritt, Cherry Valley
George L. Merritt, Cherry Valley
John H. Moon, East Springfield
E. J. Morgan, Oneonta
G. S. Olin, Oneonta
Ozias W. Peck, Oneonta
S. G. Pomeroy, West Oneonta
W. C. Searle, Cooperstown
A. S. Seeber, Milford
George A. Sloan, Westford
Nathan Smith, Middlefield
E. W. Spafford, Portlandville

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J. W. Sterricker, Roseboom
Addison P. Strong, Laurens
Kerney Strong, Laurens
J. W. Swanson, Springfield Center
J. J. Sweet, Unadilla
E. Travis, Masonville, Delaware Co
J. H. VanRensselaer, Oneonta
James Walker, Worcester
Charles F. Wharton, Collins

Number of Members, 55.

Honorary Members.

W. A. Thayer, Cooperstown. George W. Cooke, Kingston, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF PUTNAM.

(Organized July 28, 1874.)

MEETINGS.—Annual, fourth Tuesday in July; semi-annual, fourth Tuesday in January.

Officers.

A. Ely, President.
Austin La Monte, Vice-President.
L. H. Miller, Secretary and Treasurer.

Censors: J. E. Card, Jr., A. La Monte, N. W. Wheeler.

Delegate to State Medical Society: George W. Murdock.

Members.

J. Edson Card, Jr., Mahopac
Addison Ely, Carmel
Austin La Monte, Carmel
Lewis H. Miller, Brewster
George W. Murdock, Cold Spring
Nathan W. Wheeler, Patterson

Number of Members, 6.

Honorary Member.

H. Pearce, Pawling, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF QUEENS.

MEETING.—Annual, last Tuesday in May, at Mineola.

Officers. (May 29, 1888.)

W. P. Overton, President.
C. G. J. Finn, Vice-President.
John Mann, Secretary and Treasurer.

Censors: E. D. Skinner, J. H. Bogart, H. S. Thorne, G. W. Faller, C. H. Ludlum.

Delegates to State Medical Society: C. G. J. Finn, Peter Y. Frye.

Members.

John S. Andrews, East New York
R. D. Baiseley, East Rockaway
G. B. Banks, Huntington, Suffolk Co.
Charles H. Barker, Jamaica
Joseph Bloodgood, Flushing
J. H. Bogart, Roslyn
R. Booth, Newtown
W. J. Burnett, Long Island City
James S. Cooley, Glen Cove
A. C. Coombs, Newtown
R. C. F. Coombs, Woodhaven
H. H. Davidson, Vernon Valley
J. H. B. Denton, Freeport
Z. P. Denzler, Long Island City

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G. W. Faller, Oyster Bay
T. A. Friedel, Farmingdale
C. G. J. Finn, Hempstead
W. H. Forbes, Richmond Hill
Peter Y. Frye, Oyster Bay
E. A. Goodridge, Flushing
A. S. Heath, Baldwin's
F. C. Hegeman, Seaford
G. H. Hammond, Freeport
Robert H. Hayes, Maspeth
Samuel Hendrickson, Jamaica
S. Hendrickson, Brooklyn, Kings Co.
DeWitt Hitchcock, Long Island City
J. A. Hutcheson, Pearsall's
R. W. Hutcheson, Rockville Center
W. Lindsay, Huntington, Suffolk Co.
C. H. Ludlum, Hempstead
John Mann, Jericho
P. Merres, Winfield
E. Miller, College Point
T. W. Nadal, Jamaica
W. P. Overton, Cold Spring Harbor, Suffolk Co.
D. R. Porter, Manhasset
E. G. Rave, Hicksville
William Rhame, Bellmore
W. Rodman, Huntington, Suffolk Co.
J. C. Schenk, Far Rockaway
Emil Schopen, Long Island City
R. F. W. Seaman, Locust Valley
Richard F. Seaman, Glen Cove
E. D. Skinner, Mineola
F. B. Smallwood, Astoria
R. W. Taylor, Astoria
H. S. Thorne, Farmingdale
James D. Trask, Astoria
H. B. Van Deventer, Manhasset
Edwin Webb, Hempstead
Darling B. Whitney, East Norwich
F. Wickham, Corona
Philip M. Wood, Jamaica
William D. Wood, Jamaica
W. D. Woodend, Huntington, Suffolk Co.
F. A. Wright, Glen Cove

Number of Members, 57.

Honorary Members.

Walter B. Chase, Brooklyn
Lewis A. Sayre, New York

NOTE.—Deceased Members: George Aultmiller, Glen Cove.
John Ordronaux, Roslyn.

MEDICAL SOCIETY OF THE COUNTY OF RENSSELAER.

(Organized 1806.)

MEETINGS.—Annual, second Tuesday in January; stated, second Tuesday in each month, except in January, July and August.

Officers. (January 8, 1889.)

H. C. Gordinier, President.
O. F. Kinloch, Vice-President.
C. B. Herrick, Secretary.
Leroy McLean, Treasurer.

Censors: C. B. Herrick, *ex-officio*, L. McLean, *ex-officio*, J. B. Harvie
R. B. Bontecou, G. A. Bradbury.

Delegates to State Medical Society: O. F. Kinloch, M. Felter,
J. B. Harvie.

Members.

(Where no town is mentioned Troy is to be understood.)

W. Akin, 12 Fourth street
A. Allen, Grafton Centre
C. S. Allen, Greenbush
N. H. Ballou, Lansingburgh

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Joseph E. Baynes, 166 Third street
W. T. Baynes, 2419 Fifth avenue
Rudolph Bestle, 115 Fourth street
J. H. Bissel, 2187 Fifth avenue
W. N. Bonesteel, Mill st. Nail Factory
R. B. Bontecou, 82 Fourth street
G. A. Bradbury, Lansingburgh
D. D. Bucklin, Lansingburgh
C. H. Burbeck, 91 First street
M. H. Burton, 75 Fourth street
N. H. Camp, 111 Fourth street
Mary W. Case, 89 Second street
J. H. Cipperly, 131 Second street
W. C. Cooper, 81 Third street
W. S. Cooper, 81 Third street
M. Felter, 1626 Fifth avenue
E. D. Ferguson, Fifth ave. and Broadway
Wm. Finder, Jr., 2 Union place
Alfred K. Freiot, 50 Fourth street
H. C. Gordinier, 111 Fourth street
R. G. Goudie, 168 Congress street
J. B. Harvie, 1741 Fifth avenue
T. B. Heimstreet, 14 Division street
C. B. Herrick, 127 Third street
J. C. Hutchison, Ferry and Third sts
M. B. Hutton, Valley Falls
H. L. Ives, 2384 Sixth avenue
O. F. Kinloch, 16 Fourth street
S. W. Lester, 555 First street
J. D. Lomax, Marsha Infirma ry
G. E. Lyon, Fifth st. and Broadway
E. L. Lyons, 296 Fourth street
D. Magee, 116 Third street
W. P. Mason, Prof. Chemistry, R.P.I.
J. McChesney, Pawling avenue
L. McLean, 21 First street
Geo. L. Meredith, 1637 Fifth street
H. E. Mitchell, 84 Fourth street
J. W. Morris, 52 Grand street
C. E. Nichols, ——
J. O'Connor, Troy Hospital
Caroline S. Pease, 45 Third street
Z. Rousseau, Ferry and Second sts.
T. B. St. John, Centre Brunswick
C. C. Schuyler, 21 First street
W. P. Seymour, 105 Third street
W. W. Seymour, 105 Third street
S. A. Skinner, Hoosick Falls
Frank F. Stannard, 213 Fifth street
Morris Strope, Poestenkill
J. T. Sweetman, Jr., Clinton place
R. Thomson, 1 Cypress street
R. D. Traver, 14 Fourth street
H. Van Wert, Raymertown
B. J. Ward, 363 Congress street
R. H. Ward, 53 Fourth street
S. H. Webster, 811 River street
A. B. Willis, Johnsonville
Frank Winship, Eagle Mills

Number of Members, 63.

MEDICAL SOCIETY OF THE COUNTY OF RICHMOND.

(Organized January 17, 1855.)

MEETINGS.—Annual, first Wednesday in January; stated, first Wednesday in April and October, 4 P.M., at the S. R. Smith Infirmary, Tompkinsville.

Officers. (January 2, 1889.)

F. E. Martindale, President.
F. U. Johnston, Vice-President.
Mrs. May R. Owen, Secretary and Treasurer.

Censors: E. D. Coonley, T. J. Thompson, F. U. Johnson.

Delegate to State Medical Society: Mrs. May R. Owen.

Members.

H. Beyer, Stapleton
W. F. Bourne, Tompkinsville
A. L. Carroll, 30 W. 59th street, New York

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F. E. Clarke, West New Brighton
J. G. Clarke, West New Brighton
E. D. Coonley, Mariner's Harbor
R. Henry Golder, Rossville
G. C. Hubbard, Tottenville
F. U. Johnston, New Brighton
Isaac Lea, Stapleton
F. E. Martindale, Port Richmond
F. Mechtolds, Stapleton
Isaac L. Millspaugh, Port Richmond
G. W. Nelson, Port Richmond
J. J. O'Dea, Stapleton
May R. Owen, 339 Driggs st., Brooklyn
Jeff. Scales, New Brighton
T. J. Thompson, Clifton
J. J. Van Rensselaer, New Brighton
Theodore Walser, Port Richmond
W. C. Walser, New Brighton
Walker Washington, Jr., Tottenville
J. W. Wood, Port Richmond

Number of Members, 23.

MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND.

(Re-organized May 18, 1850.)

MEETINGS.—Annual, last Tuesday in May; semi-annual, last Tuesday in October.

Officers. (May 29, 1888.)

E. B. Laird, President.
E. H. Maynard, Vice-President.
William Govan, Secretary.
I. C. Haring, Librarian.

Censors: A. O. Bogert, G. A. Blauvelt, J. O. Polhemus.

Delegate to State Medical Society: —— ——.

Members.

Garrett A. Blauvelt, Nyack
Albert O. Bogert, Pearl River
William Govan, Stony Point
Isaac C. Haring, West Nyack
H. H. House, Rockland Lake
Eugene B. Laird, Haverstraw
Frank L. Leverascure, Haverstraw
C. H. Masten, Sparkill
E. H. Maynard, Nyack
J. O. Polhemus, Nyack
James J. Stephens, Tappantown

Number of Members, 11.

Honorary Member.

Isaac J. Wells, New York, N. Y.

NOTE.—Dr. Jacob S. Wigton died September 11, 1888, æt. 60.

MEDICAL SOCIETY OF THE COUNTY OF ST. LAWRENCE.

(Re-organized in 1864.)

MEETINGS.—Annual, third Tuesday in May; semi-annual, third Tuesday in October, at the place appointed by a vote of the annual meeting.

Officers. (May 21, 1889.)

A. C. Drury, President.
A. H. Allen, Vice-President.
S. W. Close, Secretary.
C. C. Bartholomew, Treasurer.

Censors: J. Morrison, E. H. Bridges, Robert Morris.

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Delegates to State Medical Society:

C. C. Bartholomew, B. F. Drury, M. E. Smith.

Members.

Andrew H. Allen, Gouverneur
F. D. Allen, Richville
F. A. Anderson, Massena
L. B. Baker, Russell
C. W. Bayley, Rensselaer Falls
H. A. Boland, Lawrenceville
C. C. Bartholomew, Ogdensburgh
John N. Bassett, Jr., Canton
Silas J. Bower, Waddington
F. H. Brewer, Madrid
E. H. Bridges, Ogdensburgh
Z. B. Bridges, Ogdensburgh
Silas E. Brown, Ogdensburgh
H. H. Carpenter, Lawrenceville
S. W. Close, Gouverneur
G. R. Cook, Louisville
M. D. Cook, West Stockholm
W. H. Cruikshank, Lisbon Centre
W. S. Daly, Ogdensburgh
A. C. Drury, Canton
Benjamin F. Drury, Gouverneur
H. E. Dunton, North Lawrence
L. E. Felton, Potsdam
J. Q. Flood, Hopkinton
James S. Gale, Morristown
James Garvin, Morristown
A. B. Goodenough, Edwards
A. R. Gregor, Hammond
E. H. Hackett, North Lawrence
H. T. Hammond, Chase's Mills
W. B. Hanbidge, Ogdensburgh
Charles B. Hawley, Richville
T. R. Hossie, Gouverneur
O. J. Hutchins, Canton
A. M. Larkin, Norwood
Orrell McFadden, Massena
David McFalls, Gouverneur
Grant C. Madill, Cgdensburg
W. J. S. Miller, Depeyster
George G. Monroe, Crary's Mill
Albert L. Morgan, Lisbon Centre
Robert Morris, Ogdensburgh
John Morrison, Ogdensburgh
Martin S. Parker, Parishville
T. A. Pease, Norwood
James A. Phillips, Morristown
John C. Preston, Canton
W. N. Rand, Rossie
G. W. Reynolds, Madrid
Jesse Reynolds, Potsdam
George M. Russell, Potsdam
David M. Seelee, Morristown
E. G. Seymour, Hermon
B. F. Sherman, Ogdensburgh
Moses E. Smith, Heuvelton
W. C. Smith, Brasher Falls
George B. Smith, Stockholm Depot
H. A. Stearns, Waddington
E. C. Walsh, Madrid
Wm. E. Whitford, DeKalb Junction
C. M. Wilson, Gouverneur

Number of Members, 59.

[NOTE.—The Secretary of St. Lawrence County Society sends a complete list of non-resident members, 62 in number, giving their present address; also a complete list of deceased members, 115 in number, with date and age at death, none of which occurred within the past year. The year of election to membership of all members is also given. Such lists are valuable, and it would be well if all the County Societies should place similar ones on file with the Secretary of the State Society.—PUB. COM.]

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MEDICAL SOCIETY OF THE COUNTY OF SARATOGA.

(Organized in July, 1807.)

This Society has declined to communicate officially with the State Society since 1883.

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in December.

Officers. (June 15, 1883.)

R. C. McEwen, President.
Frank Gow, Vice-President,
W. H. Hodgman, Secretary and Treasurer.

Censors: I. G. Johnson, W. H. Hall, C. E. Creal, T. B. Reynolds, B. J. Murray.

Delegates to State Medical Society: ——— ———, ——— ———.

Members.

A. B. Ambler, Corinth
J. M. Austin, New York
M. N. Babcock, Saratoga Springs
N. H. Ballou, Lansingburgh, Rensselaer County
C. Boughton, Waterford
F. M. Boyce, Saratoga Springs
C. D. Bull, Stillwater
A. B. Burger, Mechanicsville
D. B. Burrus, Burnt Hill
George F. Comstock, Saratoga Springs
H. C. Cooper, Clifton Park
C. Ensign, Mechanicsville
Frank Gow, Schuylerville
C. S. Grant, Saratoga Springs
W. H. Hall, Saratoga Springs
W. H. Hodgman, Saratoga Springs
E. G. Inlay, Saratoga
I. G. Johnson, Greenfield Centre
A. C. Kniskern, Crescent
M. Lewis, Ballston Spa
R. C. McEwen, Saratoga Springs
John Moore, Bacon Hill
L. Moore, Ballston Spa
B. J. Murray, Saratoga
T. E. Parkman, Rock City Falls
J. R. Preston, Schuylerville
L. B. Putnam, Saratoga Springs
T. B. Reynolds, Saratoga Springs
S. N. Rowell, Dunning street
F. A. Sherman, Ballston Spa
G. D. Van Vranken, Saratoga Springs
H. VanDenburgh, Ballston Spa
Abram Van Woert, Fisher's Ferry, Penn
F. A. Young, West Charlton

Number of Members, 34.

NOTE.—The following deaths have occurred: C. A. Gusteen, Philip Heartt, N. M. Houghton, B. W. Moxon, and C. Preston.

MEDICAL SOCIETY OF THE COUNTY OF SCHENECTADY.

(Organized January 19, 1869.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January 8, 1889).

William T. Clute, President.
Edwin Young, Vice-President.
E. P. Van Epps, Secretary.
J. L. Schoolcraft, Treasurer.

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Censors: G. E. McDonald, H. C. Van Zandt, M. G. Planck.
Committee on Vital Statistics: H. C. Van Zandt, J. Reagles.
Delegate to State Medical Society: William L. Pearson.

Members.

D. J. Barry, Schenectady
Peter Brumagham, Mariaville
N. S. Cheesman, Scotia
W. T. Clute, Schenectady
N. G. Daggett, Schenectady.
C. C. Duryee, Schenectady
L. Ellwood, Schenectady.
A. Ennis, Pattersonville
Robert Fuller, Schenectady
P. R. Furbeck, Gloversville
Charles Hammer, Schenectady
J. A. Heatley, Schenectady
H. V. Hull, Schenectady
D. L. Kothan, Schenectady
George McDonald, Schenectady
J. F. McEncroe, Schenectady
John Mackay, Schenectady
H. V. Mynderse, Schenectady
William Parsons, Schenectady
William L. Pearson, Schenectady
Maurice Perkins, Schenectady
M. G. Planck, Schenectady
James Reagles, Schenectady
Paul Roach, Quaker street
J. L. Schoolcraft, Schenectady
G. A. F. Steinführer, Schenectady
M. D. Stevenson, Mariaville
E. P. Van Epps, Schenectady
G. W. Van Voast, Schenectady
H. C. Van Zandt, Schenectady
L. T. Vedder, Schenectady
A. T. Vedder, Schenectady
Edwin Young, West Glenville.

Number of Members, 33.

MEDICAL SOCIETY OF THE COUNTY OF SCHOHARIE.

(Organized in 1806; re-organized 1857.)

MEETINGS.—Annual, first Tuesday in June: semi-annual, second Tuesday in October.

Officers. (June 5, 1888.)

Charles McCulloch, President.
R. Grant Havens, Vice-President.
H. F. Kingsley, Secretary.
David Frazier, Treasurer.

Censors: Lemuel Cross, C. K. Frazier, H. Sperbeck, W. S. Layman, G. A. Williams.
Committee on Hygiene: E. O. Bruce, Lemuel Cross, W. S. Layman.
Delegate to State Medical Society: Charles Dickinson.

Members.

F. P. Beard, Cobleskill
J. R. Brown, Seward
E. E. Brayman, Livingstonville
E. O. Bruce, Hyndsville
W. W. Burgett, Fultonham
C. S. Burnett, Summit
L. Cross, Cobleskill
C. Dickinson, Seward
J. A. Dockstader, Sharon Springs
C. K. Frazier, Cobleskill
D. Frazier, Cobleskill
J. Green, Sharon Springs
Wm. Hagadorn, Gilboa
Abram L. Haines, Schoharie
J. T. Hard, Sharon Springs
R. Grant Havens, Jefferson

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John Hotaling, Gallupville
George Jackson, Hunter's Land
H. F. Kingsley, Schoharie
Ezra Lawyer, Cobleskill
James Lawyer, Middleburgh
W. S. Layman, Schoharie
D. M. Leonard, Broome Centre
Edward Marsh, Sloansville
Charles McCulloch, Central Bridge
W. T. Miller, Cobleskill
D. Norwood, Esperance
W. S. Rivenburgh, Middleburgh
R. J. Roscoe, Carlisle
J. S. Scott, Grosvenor's Corners.
G. K. Smith, Richmondville
H. Sperbeck, Charlotteville
Charles A. Sternburgh, Howe's Cave
B. W. Terwilliger, Sloansville
James W. Tibbitts, Eminence
Thos. B. VanAlstyne, Richmondville
John H. Weckel, Breakabeen
Henry D. Wells, Middleburgh
George A. Williams, Sharon Springs.

Number of Members, 39.

MEDICAL SOCIETY OF THE COUNTY OF SCHUYLER.

(Organized December 29, 1857.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in Jnly.

Officers. (January 10, 1888.)

W. H. Heist, President.
J. Franklin Barnes, Vice-President.
George M. Post, Secretary and Treasurer.

Censors: S. B. Allen, E. H. Davis, W. Heist, G. M. Post, Geo. P. Laylor.

Delegate to State Medical Society: S. B. Allen.

Members.

S. B. Allen, Burdette
J. F. Barnes, Watkins
Wm. H. Beach, Catharine
A. L. Beahan, Canandaigua, Ontario County
R. Bell, Monterey.
M. L. Bennett, Watkins
D. W. Birge, Hector
John Boyce, Weston
E. H. Davis, Watkins
H. H. Fish, Mecklenberg
M. D. Hawes, North Hector
J. H. Hedden, Corning, Steuben Co
W. H. Heist, Townsend
George P. Laylor, Townsend
W. A. McCorn, New York, N. Y.
N. Nivison, Burdette
George M. Post, Havana
D. W. Scutt, Havana
H. D. Seaman, Beaver Dams
O. B. Sherwood, Cayutaville
B. T. Smelzer, Havana
G. O. Smith, Odessa
H. P. Stillwell, Burdette
L. T. White, Enfield, Tompkins Co
J. A. Westlake, Elmira, Chemung Co

Number of Members, 25.

MEDICAL SOCIETY OF THE COUNTY OF SENECA.

(Disbanded October 13, 1886.)

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MEDICAL SOCIETY OF THE COUNTY OF STEUBEN.

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in January.

Officers. (June 14, 1888.)

E. Winnie, President.
J. D. Mitchell, Vice-President.
Wm. B. Brown, Secretary and Treasurer.

Censors: E. Winnie, A. H. Cruttenden, M. J. Baker, W. W. Smith, M. T. Babcock.

Delegates to State Medical Society: H. C. May, Wm. B. Brown.

Members.

H. R. Ainsworth, Addison
M. L. Alden, Wayne
A. A. Aldrich, Addison
Eli Allison, Wayne
C. E. Annabel, Cameron
Henry A. Argue, Corning
M. T. Babcock, Hammondsport
Milton J. Baker, Hornellsville
J. A. Bennett, Prattsburgh
H. M. Bourne, Campbell
C. M. Brasted, Hornellsville
William B. Brown, Bath
T. O. Burlison, Pultney
D. L. Case, Howard
Amelia A. Christie, Hornellsville
M. S. Collier, Savona
A. H. Cruttenden, Bath
D. F. Cridler, Hornellsville
Mrs. A. A. Dolson, Hornellsville
J. S. Dolson, Hornellsville
M. D. Ellison, Canisteo
T. B. Fowler, Cohocton
F. S. Gallagher, Naples, Ontario Co
A. L. Gilbert, North Cohocton
H. Gilbert, Hornellsville
H. B. Goff, Campbell
I. L. Goff, Cohocton
W. T. Green, Hornellsville
W. W. Green, Prattsburgh
G. G. Hallenbeck, Corning
N. M. Herrington, Corning
Joseph Hoare, Corning
G. C. Hubbard, Hornellsville
M. B. Hubbs, Addison
John S. Hubbs, ——
Ambrose Kasson, Bath
J. R. Kelly, Hornellsville
Arthur Kendall, Corning
F. M. Lockwood, Bradford
Thomas F. McNamara, Corning
J. H. McNett, Hornellsville
H. C. May, Corning
A. F. Mills, Corning
J. D. Mitchell, Savona
Samuel Mitchell, Hornellsville
W. E. Palmer, Hornellsville
C. S. Parkhill, Hornellsville
Myron H. Parkhill, Howard
R. F. Parkhill, Howard
C. Patterson, Avoca
Thomas H. Pawling, Bath
M. M. Perry, Troupsburgh
Benjamin Picket, Canisteo
A. D. Robbins, Corning
C. B. Robertson, Towlesville
L. W. Rose, Bath
W. E. Santee, Hammondsport
Mrs. Agnes Seeley, Bath
J. R. Selover, Bath
W. Sheffield, Jasper
I. P. Smith, Bath
J. B. Smith, Hornby
W. W. Smith, Avoca
B. M. Spencer, Hornellsville
C. B. Stephens, Wallace
Chester Stewart, Cooper's Plains
P. K. Stoddard, Prattsburgh
Stephen M. Switzer, Bradford

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J. H. Tumbull, Hornellsville
Seymour C. Williamson, Canisteo
E. Winnie, Haskinville
Francis A. Wygant, Bath
Ferand Wylie, Bath

Number of Members, 73.

MEDICAL SOCIETY OF THE COUNTY OF SUFFOLK.

(Organized July 22, 1806.)

MEETINGS.—Annual, in April, at Riverhead, during Court week; semi-annual, in October, on the day and at the place directed at the April meeting.

Officers. (April, 1889.)

L. W. Halsey, President.
A. H. Terry, Vice-President.
H. H. Young, Secretary.
J. H. Benjamin, Librarian.

Censors: W. S. Preston, James L. Halsey, H. H. Young.

Delegate to State Medical Society: B. D. Skinner.

Members.

Clarence A. Baker, Yaphank
John H. Benjamin, Riverhead
W. S. Bennett, Patchogue
M. L. Chalmers. Port Jefferson
Robert G. Cornwall, Jamesport
George T. Fanning, Stony Brook
Hugh Halsey, Easthampton
James L. Halsey, Quogue
L. D. W. Halsey, Bridgehampton
Edward H. Hamill, Islip
Edward D. Holden, Holbrook
W. W. Hewlett, Babylon
William A. Hulse, Bay Shore
E. P. Jarvis, Centre Moriches
Abraham B. Luce, Riverhead
James H. Maguire, Salem, Wash. Co.
Clarence C. Miles, Greenport
John Nugent, Southampton
Edwin F. Preston, Amityville
William S. Preston, Patchogue
Barton D. Skinner, Greenport
William F. Smith, Easthampton
Arthur H. Terry, Patchogue
H. P. Terry, Cutchogue
A. L. Vandewater, Bay Shore
H. H. Young, Riverhead

Number of Members, 26.

MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN.

(Organized October 3, 1809.)

MEETINGS.—Annual, first Wednesday after the second Tuesday in June; semi-annual, whenever the Society directs at the annual meeting.

Officers. (June 13, 1888.)

C. S. Payne, President.
R. C. Paine, Vice-President.
F. A. McWilliams, Secretary.
W. G. Steele, Treasurer.

Censors: Geo. F. Perry, W. S. Webster, A. A. Gillespie.

Committee on Hygiene: J. I. Van Wert, W. W. Murphy, C. S. Payne.

Delegate to State Medical Society: W. W. Appley.

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Members.

W. W. Appley, Cochecton
George M. Beakes, Bloomingburgh
T. W. Bennett, Jeffersonville
William Brand, Jeffersonville
E. Crocker, Narrowsburgh
J. H. DeKay, Parksville
W. P. Fuller, Jeffersonville
A. A. Gillespie, Bethel
N. B. Johnson, Barryville
S. A. Kemp, Callicoon Depot
G. H. Lathrop, Livingston Manor
F. A. McWilliams, Monticello
W. A. Maltby, Jeffersonville
W. W. Murphy, Liberty
Charles S. Payne, Liberty
Ridley C. Paine, Bethel
G. F. Perry, Woodbourne
Charles E. Piper, Wurtsboro
G. F. Rice, Fosterdale
E. M. Russell, Grahamsville
W. F. Sherwood, Liberty
R. H. Sloan, Stevensville
W. G. Steele, Mongaup Valley
R. C. Tuttle, Rockland
J. I. Van Wert, White Lake
W. S. Webster, Liberty
F. T. Wheeler, Rockland

Number of Members, 27.

MEDICAL SOCIETY OF THE COUNTY OF TIOGA.

MEETINGS.—Annual, second Tuesday in January; first quarterly, second Tuesday in April; semi-annual, second Tuesday in July; second quarterly, second Tuesday in October.

Officers. (Jan. 8, 1889.)

W. L. Ayer, President.
Isaac S. Vreeland, Vice-President.
J. M. Barrett, Secretary.
G. M. Cady, Treasurer.

Censors: (None elected.)

Delegate to State Medical Society: J. M. Barrett.

Members.

James Allen, Richford
W. L. Ayer, Owego
James M. Barrett, Owego
G. W. Beach, Apalachin
Edward Beck, Owego
W. J. Burr, Newark Valley
George M. Cady, ——
G. P. Cady, Nichols
J. C. Dixon, Candor
C. C. Eastman, Binghamton, Broome County
R. D. Eastman, Berkshire
R. W. Eastman, Germany
L. D. Farnham, Binghamton, Broome County
William H. Fisher, Spencer
D. D. Harnden, Waverly
R. S. Harnden, Waverly
A. J. Harris, Candor
C. R. Heaton, Owego
C. E. Hollenbeck, Halsey Valley
J. W. Jansen, Owego
W. E. Johnson, Waverly
G. B. Lewis, Owego
I. W. Lewis, Apalachin
R. L. Lounsbury, Smithborough
Alonzo Norris, Spencer
A. T. Pearsall, Owego
E. E. Pease, Nichols
E. B. Phelps, Owego
A. W. Post, Tioga Centre
C. R. Rodgers, Newark Valley

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C. L. Stiles, Owego
J. H. Tanner, Spencer
R. C. Tappan, Newark Valley
John T. Tucker, Waverly
C. P. Vosburgh, Halsey Valley
I. S. Vreeland, Waverly

Number of Members, 35.

NOTE.—L. H. Allen, Owego, died May 3, 1888, æt. 92.
J. B. Benton, Spencer, died Sept. 1887, æt. 76.
D. S. Miller, Candor, died March, 1889, æt. 71.

MEDICAL SOCIETY OF THE COUNTY OF TOMPKINS.

(Organized about 1815; reorganized October, 1862.)

MEETINGS. — Annual, third Wednesday in May; semi-annual, third Wednesday in November.

Officers. (June 19, 1888.)

W. C. Gallagher, President.
R. L. Smith, Vice-President.
Eugene Baker, Secretary.
Albina Hunter, Treasurer and Librarian.

Censors: J. A. Lewis, J. Winslow, Albina Hunter, W. Newcomb.

Committee on Hygiene: W. Newcomb, James Law.

Delegate to State Medical Society: Eugene Baker.

Members.

Eugene Baker, Ithaca
Judson Beach, Etna
G. M. Beckwith, Groton
J. E. Beers, Danby
J. W. Brown, Ithaca
C. C. Cook, Newfield
M. A. Demund, W. Danby
Benjamin Dunning, Trumansburgh
W. C. Gallagher, Slaterville
Albina Hunter, Ithaca
F. A. Kerst, Jacksonville
E. O. Kyle, Ithaca
J. A. Lewis, Ithaca
Edward Meany, Ithaca
Wesley Newcomb, Ithaca
S. H. Peck, Ithaca
S. P. Sackett, Ithaca
S. A. Sebring, Newfield
R. L. Smith, Ithaca
Burt G. Wilder, Ithaca
John Winslow, Ithaca

Number of Members, 20.

Honorary Members.

Prof. S. H. Gage, Ithaca. Prof. James Law, Ithaca.

MEDICAL SOCIETY OF THE COUNTY OF ULSTER.

MEETINGS.—Annual, first Tuesday in June, at Kingston; quarterly, second Tuesday in September, December, and March, at such place as the Comitia Minora may determine.

Officers. (June 7, 1888.)

A. H. Mambert, President.
C. L. Dodge, Vice-President.
W. D. Hasbrouck, Recording Secretary.
C. W. Crispell, Corresponding Secretary.
Jacob Chambers, Treasurer.

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Censors: E. D. Chipman, H. Van Hoevenberg, H. Craft, R. Crawford.

Delegates to State Medical Society: E. D. Chipman, C. W. Crispell, H. Craft.

Members.

Benjamin R. Bevier, Napanock
B. B. Bloom, Olive
E. W. Carhart, Milton
Jacob Chambers, Kingston
E. D. Chipman, Saugerties
George W. Cooke, Kingston
H. Craft, Stone Ridge
Rufus Crawford, West Camp
C. W. Crispell, Rondout
Isaac C. Dart, Highland
Thomas S. Dawes, Saugerties
John A. Decker, Ulster Park
Wm. B. DeWitt, Stone Ridge
C. W. Deyo, Kingston
C. L. Dodge, Kingston
J. F. S. Eastgate, Ellenville
P. Finch, Ellenville
J. Freston, Clintondale
W. H. Gedney, Milton
J. M. Griffin, West Hurley
C. V. Hasbrouck, Rosendale
J. Hasbrouck, Jr., Port Ewen
W. D. Hasbrouck, Rondout
P. Hayden, Rosendale
P. D. B. Hoornbeck, Wawarsing
J. E. D. Hoornbeck, Kerhonkson
Augustus Huhne, Rondout
A. C. Hull, Olive
T. O. Keator, Accord
George S. LaMoree, Highland
E. H. Loughran, Kingston
R. Loughran, Kingston
A. H. Mambert, Rondout
C. T. Montgomery, Glasco
R. M. Murphy, Rondout
A. H. Palmer, Marlborough
S, Schoonmaker, Rosendale
G. C. Smith, Rondout
L. B. Smith, Woodstock
H. Van Hoevenburg, Kingston
Alfred S. Vrooman, High Falls
J. D. Wurts, Kingston

Number of Members, 42.

Honorary Members.

A. T. Douglas, New London, Conn.
G. A. Hawley, Guatemala, C. A.
Robert Newman, New York, N. Y.
George F. Shrady, New York, N. Y.

NOTE.—Josiah Hasbrouck died March 25, 1889, æt. 59.
C. D. Jennings died
H. R. Winter died

MEDICAL SOCIETY OF THE COUNTY OF WARREN.

MEETINGS. — Annual, second Tuesday in June, at Lake George; semi-annual, when and where the Society determine.

Officers. (June 8, 1886.)

W. R. Adamson, President.
G. H. Aldrich, Vice-President.
W. D. Aldrich, Secretary.

Censors: A. O. Amedon, L. Charette, D. B. Howard.

Delegate to State Medical Society: B. G. Streeter.

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Members.

W. R. Adamson, Lake George
F. E. Aldrich, Chestertown
G. H. Aldrich, Stony Creek
William D. Aldrich, Warrensburgh
W. W. Aldrich, Weaverton
A. O. Amedon, Glens Falls
L. Charette, Warrensburgh
R. J. Eddy, Glens Falls
James Ferguson, Glens Falls
C. A. Foster, Glens Falls
D. B. Howard, Warrensburgh
E. W. Howard, Warrensburgh
C. J. Loggins, Weaverton
A. Mallery, Chestertown
G. R. Martine, Glens Falls
F. H. Stevens, Lake George
Buel G. Streeter, Glens Falls
Fred. B. Streeter, Glens Falls

Number of Members, 18.

NOTE.—Dr. F. L. R. Chapin died at Glens Falls, April, 1889.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

(Organized July 1, 1806.)

MEETINGS.—Annual, the first Tuesday in June, at such place within the county as the Society shall designate.

Officers. (June 19, 1888.)

A. W. Tupper, President.
T. Z. Gibbs, Vice-President.
Henry Root, Secretary and Treasurer.

Censors: A. W. Tupper, W. B. Maynard, T. Z. Gibbs.

Committee on Hygiene: F. H. Braymer, Ross Wilson, Wm. B. Meelick.

Delegates to State Medical Society: Henry Root, S. J. Banker.

Members.

O. C. Baker, South Hartford
S. J. Banker, Fort Edward
F. H. Braymer, North Granville
Frank H. Carpenter, West Rupert
J. Cipperly, Middle Falls
E. G. Clark, Sandy Hill
James S. Cooley, Glen Cove
C. J. Farley, Fort Edward
S. J. Finch, Fort Ann
J. J. Flint, Troy, Rensselaer Co
T. Z. Gibbs, Fort Ann
H. Gray, Greenwich
Albert C. Griffin, Fort Miller
P. Z. Hebert, London
A. Hewitt, Saratoga Springs, Saratoga County
B. R. Holcomb, Whitehall
S. B. Irwin, West Hebron
Montgomery Jones, Fort Edward
Charles W. Keefer, Fort Miller
B. F. Ketchum, Cambridge
J. Knowlson, Poultney, Vt.
J. Lambert, Salem
A. J. Long, Whitehall
J. A. Madison, West Hebron
W. B. Madison, West Hebron
W. B. Maynard, Salem
Wm. B. Meelick, Fort Edward
J. Millington, East Greenwich
Nelson Monroe, Whitehall
I. T. Munroe, Granville
W. B. Murray, Greenwich
D. T. Pierce, Argyle
Wm. H. Renois, East St. Louis, Mo.
Henry Root, Whitehall
B. C. Senton, Whitehall
J. C. Sill, Argyle
W. A. Tenney, Granville

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A. W. Tupper, North Granville
T. C. Wallace, Cambridge
G. H. Whitcomb, Greenwich
Ross Wilson, Sandy Hill
A. M. Young, Salem

Number of Members, 42.

MEDICAL SOCIETY OF THE COUNTY OF WAYNE.

(Organized July 2, 1823.)

MEETINGS.—Annual, second Tuesday in July; semi-annual, second Tuesday in October.

Officers. (July 20, 1888.)

W. J. Hennessy, President.
H. L. Chase, Vice-President.
Miss J. M. Turner, Secretary.
Darwin Colvin, Treasurer.

Censors: J. N. Arnold, M. A. Veeder, L. D. Trowbridge, A. A. Young, M. B. Huff.

Delegates to State Medical Society: J. N. Arnold, —— ——

Members.

J. N. Arnold, Clyde
J. M. Besley, Palmyra
G. D. Barrett, Marengo
H. N. Burr, Walworth
H. L. Chace, Macedon
Darwin Colvin, Clyde
L. A. Crandall, Fairville
E. H. Draper, Wolcott
W. B. Ely, Newark
Frank Finley, Macedon
L. W. Gaylord, Sodus
W. H .Greene, Huron
S. D. Harrison, Palmyra
W. J. Hennessy, Palmyra
D. B. Horton, Red Creek
M. B. Huff, Walworth
Samuel Ingraham, Palmyra
N. E. Landon, Newark
J. F. Munn, South Butler
M. W. T. Negus, South Sodus
W. F. Nutten, Newark
F. M. Pasco, Red Creek
James W. Putnam, Lyons
H. F. Seaman, Alton
A. F. Sheldon, Lyons
J. E. Smith, Clyde
J. L. Sprague, Williamson
L. S. Sprague, Williamson
L. W. Sutherland, Lyons
L. D. Trowbridge, Palmyra
Miss J. M. Turner, Lyons
M. A. Veeder, Lyons
George D. York, Huron
A. A. Young, Newark

Number of Members, 34.

MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER.

(Organized May 8, 1797.)

MEETINGS.—Annual, third Tuesday in June; intermediate, third Tuesday in September, November, January, and April.

Officers. (June 19, 1888.)

William H. Helm, President.
E. I. Harrington, Vice-President.
William F. Greene, Secretary.
Robert T. Howe, Treasurer.

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Censors: P. Collard, J. J. Linson, H. E. Schmid.
Committee on Hygiene: A. M. Campbell, E. F. Brush, H. E. Schmid.
Delegates to State Medical Society: P. Collard, H. E. Schmid, E. I. Harrington.

Members.

I. H. Ashton, Dobb's Ferry
Frank A. Augur, Armonk
G. B. Balch, Yonkers
A. T. Banning, Mt. Vernon
Elizabeth H. Bates, Port Chester
W. A. Bell, Yonkers
A. C. Benedict, Yonkers
Charles S. Benedict, 315 W. 19th st, New York
Valentine Brown, Yonkers
E. F. Brush, Mt. Vernon
C. P. Byington, Croton Landing
P. S. Byrne, Yonkers
P. A. Callan, Yonkers
A. M. Campbell, Mt. Vernon
Stewart B. Carlisle, Mt. Vernon
W. J. Carpenter, Katonah
H. Carruthers, Tarrytown
D. L. Casselman, Purdy's Station
J. Frs. Chapman, Katonah
G. C. S. Choate, Pleasantville
J. H. Churchill, Pawling
Philander Collard, Sing Sing
Charles S. Collins, Sing Sing
E. E. Colton, Yonkers
J. E. Comfort, Morrisiania
R. B. Coutant, Tarrytown
A. H. Crump, Jerome
James H. Curry, Shrub Oak
Newton F. Curtis, White Plains
H. G. V. DeHart, Pleasantville
Wm. E. Diller, Williams Bridge
Charles E. Drummond, Bedford
Robert Condit Eddy, New Rochelle
George J. Fisher, Sing Sing
N. H. Freeland, Tarrytown
J. B. Fulton, Irvington
John H. Furman, Tarrytown
Thomas F. Goodwin, Mt. Vernon
William F. Greene, Mt. Vernon
J. Albert Hagy, Dobb's Ferry
E. I. Harrington, Yonkers
H. F. Hart, Shrub Oak
William H. Helm, Sing Sing
E. M. Hermance, Yonkers
P. L. Hitchcock, Croton Falls
Stephen F. Horton, 105 W. 87th street, New York
Robert T. Howe, Mt. Vernon
H. K. Huntington, New Rochelle
N. C. Husted, Tarrytown
Louis Jeschinsky, Mt. Vernon
C. H. Judson, Dobb's Ferry
C. C. Knight, Peekskill
Jacob J. Lewin, Port Chester
Z. E. Lewis, New Rochelle
John J. Linson, Tarrytown
George H. Magness, White Plains
Charles Mason, Peekskill
E. F. Matthews, Port Chester
W. J. McDermott, Westchester
S. H. McIlroy, Morrisania
B. W. McMichol, Westchester
C. S. Mead, Portchester
Samuel F. Mellen, Sing Sing
Charles A. Miles, Yonkers
W. A. Miner, Mt. Kisco
A. J. Mixsell, Rye Neck
Henry Moffatt, Yonkers
C. J. Nordquist, Tuckahoe
Patrick W. O'Brien, Peekskill
C. O. Olmstead, Cross River
John Parsons, King's Bridge
H. E. Patch, Chappaqua
P. H. Pyne, Yonkers
H. E. Schmid, White Plains
E. Schoelderfer, Yorktown
Fred. H. Strong, Yonkers
W. H. Sherman, Yonkers
H. Eugene Smith, Mt. Vernon
Alex. O. Snowden, Peekskill
Thomas Snowden, Peekskill
Samuel Swift, Yonkers
E. B. Tefft, New Rochelle

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Harrison Teller, Mt. Kisco
John C. Todd, Tarrytown
Nathan P. Tyler, New Rochelle
Nathan A. Warren, Yonkers
G. C. Weiss, Mt. Vernon
W. L. Wells, New Rochelle

Number of Members, 88.

NOTE.—James Dunworthy, died September 9, 1888.
William C. Pryer, died 1888.
M. J. Reinfelder, died 1888.

MEDICAL SOCIETY OF THE COUNTY OF WYOMING.

MEETINGS.—Annual, second Tuesday in June.

Officers. (June 10, 1884.)[1]

George M. Palmer, President.
Robert Rae, Vice-President.
Zera J. Lusk, Secretary and Treasurer.

Censors: Robert Rae, William N. Martin, D. W. Rudgers, George M. Blackmore, E. G. Harding.

Delegate to State Medical Society: Milan Baker.

Members.

Charles R. Barber, Perry Centre
George M. Blackmore, Pike
F. E. Bliss, Weathersfield Springs
William M. Boddy, North Java
Carlos E. Bowman, Bennington Centre
William Crichton, Perry Centre
E. G. Harding, Wyoming
S. S. Kennedy, Varysburg
Zera J. Lusk, Warsaw
W. N. Martin, Cowlesville
R. W. Miller, Castile
Samuel S. Miller, Java
John C. Nichols, North Java
George M. Palmer, Pike
George Palmer, Jr.,
Lucius Peck, Arcade
Robert Rae, Portageville
James P. Rathbun, Java
D. W. Rudgers, Perry
S. Chester Smith, Castile
Horatio Spencer, Pike

Number of Members, 21.

MEDICAL SOCIETY OF THE COUNTY OF YATES.

MEETINGS.—Annual, first Tuesday in June; semi-annual, second Tuesday in January. Other meetings as directed by the Society.

Officers. (June 5, 1888.)

William A. Carson, President.
B. L. Holt, Vice-President.
C. M. Van Dyke, Secretary.
Marquis C. Babcock, Treasurer.

Censors: B. L. Holt, J. M. Maloney, C. M. Van Dyke.

Committee on Hygiene: William Oliver, A. R. Otis, R. R. C. Bradwell.

Delegate to State Medical Society: John M. Maloney.

[1] No meeting since this date.

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Members.

Marquis C. Babcock, Branchport
R. R. C. Bradwell,
G. W. Brundage, Dresden
Winans Bush, Branchport
William A. Carson, Rushville
W. C. Furguson, Penn Yan
Cyrus C. Harvey, Dundee
B. B. Havens, Rushville
B. L. Holt, Penn Yan
Schuyler Lott, Bellona
N. L. Lusk, Penn Yan
John M. Maloney, Eddytown
O. E. Newman, Potter Centre
William Oliver, Penn Yan
A. R. Otis, Dundee
John E. Ottoway, Penn Yan
D. M. Smith, Penn Yan
Jobe S. Stevens, Penn Yan
C. B. Stone, Himrods
C. M. Van Dyke, Himrods
James M. Waddell, Penn Yan

Number of Members, 21.

Whole number of Members, of County Societies as reported, 2642

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APPENDIX.

LAWS OF NEW YORK, OF INTEREST TO THE MEDICAL PROFESSION, ENACTED BY THE LEGISLATURE OF 1889.

[Every law, unless a different time shall be prescribed therein, shall commence and take effect throughout the State, on and not before the twentieth day after the day of its final passage, as certified by the Secretary of State. Sec. 12, title 4, chap. 7, part 1, Revised Statutes.]

Chapter 95, Laws of 1889.

AN ACT

To authorize the formation of corporations for the establishment and maintenance of hospitals, infirmaries, dispensaries, and homes for invalids or aged and indigent persons.

APPROVED by the Governor March 29, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Any number of persons, more than eleven in number, who may desire to form a corporation for the purpose of erecting, establishing, maintaining, and operating a hospital, infirmary, or home for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies, or physical injuries, or physical weaknesses or deformities or infirmities, or a home for aged and indigent persons or free dispensary, may make, sign and acknowledge, before an officer competent to take the acknowledgment of deeds, and file in the office of the clerk of the county in which such hospital, infirmary, or home is to be located, and a duplicate thereof in the office of the Secretary of State, a certificate in writing in which shall be stated the corporate name of said corporation, and the objects for which the same shall be formed, the names of the persons who shall form the board of managers of said corporation for the first year, the term of duration of such corporation, and the name of the town or city and county in which the said hospital, home, infirmary, or dispensary is to be located; and thereupon said persons and such other persons as may thereafter become associated with them, shall become and be a corporation by the corporate name specified in the said certificate.

§ 2. It shall be lawful for any corporation organized under the provisions of this act, to establish and maintain an institution for any one or more or

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all the purposes mentioned in the first section hereof, provided that the certificate of incorporation specify precisely for which of said purposes such institution is to be established.

§ 3. Such corporation shall have power to take, receive, and hold, by gift, grant, devise or bequest, in trust or in perpetuity, any real and personal estate, either and both, for the uses and purposes of the said corporation; provided, however, that the annual net income of its property, real and personal, shall not exceed two hundred thousand dollars.

§ 4. The property of said corporation, both real and personal, shall be exempt from taxation, to the extent that, and so long as, the same shall be used exclusively for the care, reception, maintenance, medical and surgical advice, aid and treatment of persons needing such medical and surgical advice, aid and treatment, or the care and maintenance of infirm, aged, and indigent persons, and provided that it shall and do[1] actually render medical and surgical aid, advice and treatment to poor persons in need of such treatment without charge therefor, or care for and maintain infirm, aged, and indigent persons without charge.

§ 5. It shall be lawful for the certificate of incorporation hereinbefore mentioned, to declare and prescribe what shall be the qualifications of members of the said corporation in the matter of adherence or non-adherence to any particular school or theory of medical or surgical treatment, and what system of practice of medicine or treatment shall be used and applied in such hospital, infirmary or home.

§ 6. The affairs of such corporation shall be conducted, managed and administered by a board of managers, to consist of nine persons. The persons named as managers or trustees for the first year, in the certificate of association hereinbefore mentioned, shall administer the affairs of the said corporation and its hospital, infirmary, or home, for the first year after its organization. At the expiration of said year, and annually thereafter, an election of members of the board of managers shall be had. Such election shall be by ballot and all members of the corporation shall be entitled to vote thereat. Only members of the corporation shall be eligible as members of such board. At the first election a full board shall be chosen. The persons there elected shall divide themselves by lot into three classes of three members each. Those in the first class shall hold office for one year; those in the second class for two years, and those in the third class for three years. At each subsequent annual election three members of the board shall be elected, who shall hold office for three years. Members of said board shall hold office until their successors are elected. The board of managers shall have power to fill all vacancies occurring in said board by death, resignation or any other cause, except expiration of term. Such elections to fill vacancies shall be made by ballot. A person elected to fill a vacancy shall serve only for the balance of the term in which the vacancy occurred, or until his successor is elected.

§ 7. The board of managers shall annually elect from their own number, a president, vice-president, secretary and treasurer, who shall hold office respectively for one year or until their successors are elected. The said board shall also appoint such subordinate officers, physicians, surgeons,

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nurses, assistants and servants of such institutions, as in their judgment its needs demand; and shall fix the compensation of such subordinates, define their duties, and shall have power to remove them or any one of them in the discretion of said board. The board of managers may also create an executive committee consisting of as many members of the board as they deem advisable, and may delegate to such executive committee such powers of control and management of the home, hospital, dispensary, or infirmary as they deem proper, such powers, however, to be distinctly specified in the by-laws. A majority of such board of managers shall constitute a quorum for the transaction of business except the sale or alienation of any of the real or personal estate of said corporation, or the leasing of any such real estate for a term longer than one year, for which purposes, or any of them, the consent of three-fourths of all the members of said board shall be necessary.

§ 8. The board of managers shall make by-laws for the conduct of the affairs of the corporation. No alteration or amendment of the by-laws, nor any addition thereto shall be made except by majority vote of the board of managers at a meeting of said board, nor unless a written notice of an intention to propose such alteration, amendment or addition at a meeting of such board to be held at a time and place mentioned in such notice has been served personally upon each member of said board at least three days prior to the time mentioned in such notice for the holding of such meeting. The vote upon all questions of change, amendment or addition to the by-laws shall be taken by calling the roll of said board, and upon such vote the ayes and nays shall be recorded in the minutes. The by-laws shall define the duties of the various officers, appointees and servants of the corporation, and of the executive committee of the board of managers. The by-laws may specify what classes and descriptions of persons shall or may receive treatment, advice, care and maintenance from said hospital, infirmary, dispensary or home. The by-laws shall fix the dates of the annual and other elections of officers, and shall prescribe the method by which persons may be admitted to membership of the corporation, and the terms and conditions of such membership not inconsistent with the statutes of this State.

§ 9. No member of the board of managers shall receive directly or indirectly any compensation for his services as such member, nor for his services as president, vice-president, secretary, or treasurer, in case he be elected to either of such offices, nor shall any member of said board be interested directly or indirectly in any contract relating to the hospital, home, dispensary, infirmary, or other institution maintained by said corporation, nor in any contract for the furnishing of supplies thereto.

§ 10. The legislature may at any time regulate any corporation formed under this act, or modify its powers, or annul its charter and dissolve such corporation.

§ 11. This act shall take effect immediately.

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Chapter 141, Laws of 1889.

AN ACT

To amend section four hundred and seven of the Penal Code, with reference to adulteration of food, drugs, and liquors.

APPROVED by the Governor April 15, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section four hundred and seven of the Penal Code is amended to read as follows:

§ 407. A person who either,

1. With intent that the same may be sold as unadulterated or undiluted, adulterates or dilutes wine, milk, distilled spirits or malt liquor, or any drug, medicine, food or drink, for man or beast: or,

2. Knowing that the same has been adulterated or diluted, offers for sale, or sells the same, as unadulterated or undiluted, or without disclosing or informing the purchaser that the same has been adulterated or diluted, in a case where special provisions has not been otherwise made by statute for the punishment of the offense; or,

3. Sells, or offers to sell, or stores with intent to sell, or transports with intent to sell, for any purpose other than the cooling of beer in casks, ice cut from any canal, or from the wide waters or basins of any canal, unless the ice so sold, or offered for sale, or stored or transported, is contained in a building, cart, car, sleigh, float or receptacle upon which is plainly marked, in Roman capital letters, not less than eight inches square, the words, "Canal Ice," is guilty of a misdemeanor.

Chapter 181, Laws of 1889.

AN ACT

Relating to the practice of pharmacy.

BECAME a law without the approval of the Governor, in accordance with the provisions of article four, section nine of the Constitution, April 24, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. To entitle any person to a license as a pharmacist or assistant pharmacist from any board of pharmacy created under the laws of this State, he must prove to the board of pharmacy to which application is made, in addition to the present requirements of the law relating to the granting of licenses by such boards, that he is a resident of the city, county or district for which the board of pharmacy, to which application is made, is created, or, if a non-resident, that he intends to practice in said city, county or dis-

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trict; that he has not applied for a license to, or been examined by, any other board of pharmacy of this State and been refused such license within six months immediately preceding, which proof may be made by his own affidavit.

§ 2. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

§ 3. This act shall take effect immediately.

Chapter 383, Laws of 1889.

AN ACT

To establish and organize the State Commission in Lunacy, and to define its duties.

APPROVED by the Governor May 14, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Within ten days after the passage of this act the Governor, by and with the advice and consent of the Senate, shall appoint three persons who shall be commissioners for the purpose of this act, to be called the State Commissioners in Lunacy, and said commissioners shall constitute the State Commission in Lunacy; said commissioners shall respectively hold their offices for the term of six years, or until their successors are appointed, but the three first appointed shall hold their offices for the terms of six, four, and two years, as hereinafter provided. And it shall be the duty of the Governor in subsequent appointments to fill vacancies, and to select persons having the qualifications defined in sections two, three and four of this act for the respective positions.

§ 2. One of said commissioners shall be a reputable physician, a citizen of the State and a graduate of a legally chartered medical college, having been at least ten years in the actual practice of his profession, and who has had experience in the care and treatment of the insane, and of the management of institutions for the insane; said medical commissioner shall be chairman of the State Commission in Lunacy hereby created and shall hold his office for the term of six years; he shall receive an annual salary of five thousand dollars and his travelling and other incidental expenses.

§ 3. One of said commissioners shall be a reputable member of the bar, of at least ten years' standing, and a citizen of the State. He shall hold his office for the term of four years, and shall receive an annual salary of three thousand dollars and his travelling and other incidental expenses.

§ 4. The other and third one of said commissioners shall be a citizen of reputable character, who shall hold his office for a term of two years, and shall receive ten dollars per day for actual services as a member of the commission and his travelling and other incidental expenses.

§ 5. Within ten days after their appointment the commissioners shall respectively take and subscribe the oath of office required of other State officers, which shall be filed in the office of the Secretary of State, who is hereby authorized and directed to administer said oath.

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§ 6. The said commission shall be provided by the proper authorities with suitable accommodations in the State Capitol for its office, where it shall hold its meetings as often as once in three months, the time for such meetings being fixed by the conmissioners; additional meetings may be held at other times and places as the exigencies of the service may require. The commissioners are authorized to employ such number of clerks as they may deem necessary, but the total cost of such clerical service shall not exceed three thousand dollars in one year.

§ 7. The said commission shall keep in its office records showing the names and residences of all judges in this State who are empowered by law to approve medical certificates of insanity, or make an order of commitment of an insane person to custody; and also a record showing the name, residence and certificate of each medical examiner in lunacy qualified in accordance with the laws of this State; and it is hereby made the duty of each medical examiner in lunacy at the time of the passage of this act, to forward to the State Commission in Lunacy a certified copy of his certificate of qualification. Hereafter it shall be the duty of every physician who receives a certificate as a medical examiner in lunacy in this State, to forward a certified copy thereof to the office of the commission within three days after such certificate is granted, and said commission shall cause the same certificate to be recorded as soon as received, and shall promptly advise said physician of the recording thereof in writing. One year after the date of the passage of this act, it shall not be lawful for any medical examiner in lunacy to make a certificate of insanity for the purpose of committing any person to custody, unless his certificate has been so forwarded, and its record in the office of the commission, as above provided, has been acknowledged.

§ 8. Within one year from the date of the passage of this act, the commission shall cause a registration in its office of all of the insane in custody in the asylums, public or private, homes or retreats in this State; these records shall be made in books suitably arranged, and the records shall contain among other facts the following particulars, as far as obtainable, of each person in custody in the several institutions devoted to the insane, namely: The sex, name, age, nativity, occupation, civil condition, date of commitment, names of signers of the medical certificates and of the judge approving the certificates. It shall also be the duty of said commission to keep a similar record of all persons committed as insane after the passage of this act together with the following additional facts: The names and residences of the physicians who made the certificates; the name and residence of the judge who approved the certificates; the asylum or institution to which the insane person was conveyed; the date of admission and whether brought from home or an institution; by whom brought, and the insane person's physical condition. These records shall hereafter be so kept as to show in addition to the preceding facts, the date of discharge of each patient, and whether recovered, improved or unimproved, and to whose care committed; if transferred, for what cause, and to what institution; and if dead, the date and cause of death. These records shall be in books prepared for such registration, which shall be preserved in the office of the commission, and shall be accessible only to the commissioners and their clerks, except by

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order of a court or the consent of the chairman of the commission, in writing.

§ 9. It is hereby made the duty of the authorities of the several institutions for the insane to furnish to the commission the above facts in relation to each person now or hereafter in said institutions, and such other facts obtainable as the commission may from time to time demand. It shall also be the duty of every superintendent of an asylum or keeper of an institution for the insane, whether public or private, within three days after the admission of an insane person to such institution, to cause a true copy of the medical certificates or order on which such person shall have been received, and also a statement according to the form prescribed by the commission; and whenever any patient shall be discharged or transferred from any institution for the insane, in this State, or shall die therein, the superintendent or keeper of such institution shall within three days next after such discharge, transfer, or death, send the information in accordance with the form prescribed by the commission.

§ 10. The said commissioners shall have full power at all times to look into and examine the condition of the asylums, public and private, and institutions for the custody, care, and treatment of the insane; to inquire into the methods of government, and the management of their inmates; to examine the condition of the buildings, grounds, and other property connected therewith, and into all other matters pertaining to their usefulness and good management; and for these purposes they shall have free access to the grounds, buildings, and all books relating to said institutions; and all persons, now or hereafter in any manner connected with the same, are hereby directed and required to give such information and afford such facilities for inspection as the said commissioners shall require.

§ 11. As soon as practicable after the passage of this act, and thereafter twice in each year, every asylum and institution in which the insane are in legal custody in this State, shall be visited by all of the commissioners together, or by a majority of them, and such visits shall be made on such day or days, and at such hours of the day or night and for such length of time as the visiting commissioners may choose; they shall inspect every part of each asylum and institution, and every outhouse, place, and building communicating therewith, or detached therefrom, and every part of the ground or appurtenances held, used or occupied therewith; they shall examine all of the records and all of the methods of administration, the general and special dietary, the stores and methods of supply; they shall, as far as circumstances may permit, see every patient then confined therein, and shall give each patient suitable opportunity to converse with them, or either of them, apart from the officers and attendants; and said commissioners shall, as far as they may deem it necessary, examine the attendants and employés, and make such inquiries as will determine their fitness for their respective duties. They shall meet the managers, trustees, or responsible authorities of each institution, or as many of the number as practicable, in conference, and consider in detail all questions of management and of improvement of the respective institutions. At the conclusion of the inspection they shall enter at length, in the "commissioner's visiting book," the

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results of the examination, together with the recommendations which they may deem necessary to make for the better management or improvement of the institution or any part thereof.

§ 12. It shall be the duty of the medical and legal commissioners to visit each asylum and institution, to which the insane are admitted on certificates of insanity, soon after the close of each quarter of the year; at these visits they shall see all of the patients admitted during the preceding quarter, still inmates, and inquire as to their condition, giving them opportunities to converse with each apart from the officers and attendants; they shall examine all the commitment papers of patients admitted during the quarter to ascertain that no person has been admitted on certificates not properly executed; they shall examine all of the detained correspondence of patients and cause any letters which they think wrongfully detained to be forwarded to their destination; they shall make such further examination of the institution, the condition of the patients, and the management, as they may deem important, and shall enter in the "commissioner's visiting book" a summary of the results of their inspection and of their recommendations. At the next meeting of the commissioners they shall report the results of their inspection of the several institutions, with their recommendations in each case.

§ 13. It shall be the duty of the medical commissioner, in addition to the duties hereinbefore mentioned, to visit each asylum and institution in which the chronic insane are in legal custody, once in each year, apart from the other commissioners, unless otherwise ordered and provided by the commission; at each such visit he shall see all of the inmates and inquire as to their condition and care; he shall give each person an opportunity to converse with him alone and apart from the officers and attendants. He shall at each visit especially examine as to the methods of bathing, the dietary, the occupations and amusements of patients, the amount, kind, and causes of restraint; he shall see all patients sick in bed, and examine the list of sick during the quarter, and if preventable disease exist, or has existed, he shall make thorough inquiry into the cause or causes of such disease, and if the cause is discovered he shall recommend the proper remedial measure; he shall make at least one night inspection at each visit to a State asylum during which he shall especially examine the efficiency of the night service, and the condition of the disturbed, filthy, and suicidal classes; he shall examine all of the sanitary fixtures or arrangements of the buildings and inform the authorities of all defects; at the conclusion of his visit he shall enter in the "commissioners' visiting book" a summary statement of the results of his inspection and his recommendations, and report the same to the commission at its next meeting.

§ 14. It shall be the duty of the commissioners at their first visit to each institution, licensed in accordance with the laws of this State to have the care, custody, or treatment of the insane, or persons of unsound mind, to examine the terms of the existing license and determine how far the institution is conducted in compliance with said license; the commission shall have power to continue, amend, or revoke any existing license as, in their opinion, the interests of the insane in their respective institution demands.

§ 15. In all cases where from evidence laid before the commission there

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is reason to believe that any person is wrongfully deprived of his liberty or is cruelly, negligently, or improperly treated in any asylum, or institution for the custody of the insane, or inadequate provision is made for the skilful medical care, proper supervision and safe-keeping of the insane, it shall order an investigation of the facts in the case by one of its members; the commissioner conducting such inquiry is hereby empowered to issue compulsory process for the attendance of witnesses and the production of papers, to administer oaths and to examine persons under oath, and to exercise the same powers as belong to referees appointed by the supreme court. If the facts above mentioned shall be proved to the satisfaction of the commission, or a majority thereof, said commission is empowered to issue an order in the name of the people of the State, and under its official seal directed to the superintendent or managers of such institution, requiring them to modify such treatment or apply such remedy, or both, as shall therein be specified. And in case such order is disobeyed, or negligently executed, the commission may and it shall be its duty, to present such order, with a statement of the facts duly verified upon which it was made, to a justice of the supreme court, who may, thereupon, by order require such superintendent or manager to show cause before him or some other justice of the supreme court, at a place in the judicial district where such asylum, institution or establishment is situated, and at a time specified in such order not less than two days after the service thereof, why an order should not be made directing performance of such order of the commission, and on failure to show cause, the said justice shall make such order; and for any disobedience of any order made pursuant to the provisions of this section, the same proceedings may be taken to compel performance thereof or to punish for contempt as may be had in civil actions.

§ 16. The commission is hereby empowered to employ a stenographer, whenever any testimony is to be taken before either of the commissioners in the discharge of his official duties, and the charges of such stenographer shall be paid by the comptroller upon presentation of vouchers duly attested, provided such charges shall not exceed ten dollars per day for the time actually employed by each stenographer, or one thousand dollars in any one year in the aggregate. Whenever the said commission shall undertake any investigation into the general management and administration of any asylum or institution for the care and custody of the insane, it shall give due notice thereof to the district attorney of the county in which such asylum or institution is situated, and it shall thereupon be the duty of such district attorney to appear at such investigation in behalf of the people and examine all witnesses who may be in attendance thereat.

§ 17. The said commissioners are hereby authorized to administer oaths and examine any person or persons in relation to any matters connected with the inquiries authorized by this act; the commission shall have power to make and use an official seal, and all copies of papers and documents in its possession and custody may be authenticated in the usual form under its official seal and signature, and used as evidence in all courts and places in this State in like manner as similar certificates emanating from any other public office.

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§ 18. It shall be the duty of the authorities of every asylum and institution for the care, custody, or treatment of the insane, to provide a blank book, to be known as "the commissioners' visiting book." Said book shall be kept among the records of the institution for consultation by the authorities of the respective institutions, and for reference by the commissioners at their several visits.

§ 19. The superintendent of every asylum and institution for the insane shall, within one week after the dismissal for misconduct of any nurse or attendant employed in such asylum, transmit to the Commission in Lunacy, by mail, information in writing of such dismissal, and state the cause thereof; and the commission shall preserve the name of such nurse or attendant, with the facts relating to his or her dismissal, in a book provided for that purpose.

§ 20. The superintendant of every asylum and institution, and the keeper of every county poor-house and city alms-house where insane are kept, shall, on or before the first day of November in each and every year, report to the Commission in Lunacy the numbers of male and female insane, idiot and epileptic in his custody on the first day of October last past, together with a statistical exhibit of the number of admissions, discharges, and deaths that have occurred within the past year among these classes of persons, the actual condition of those discharged, the causes of death of those dying within the institution, and such other facts and information as the commission may require, and whoever shall neglect to report as above directed shall be guilty of a misdemeanor.

§ 21. The commission shall, on or before the first day of January of each year, transmit to the Governor a full report of their acts, together with such facts in regard to the insane and the management and conduct of the asylums and institutions for their care and treatment as they may deem necessary for his information, to which they shall add in proper form and detail the measures which, in their opinion, are best adapted to improve the care and treatment of the insane; said report to be transmitted by the Governor to the Legislature with his recommendations.

§ 22. The commission is hereby authorized to make such rules and regulations in regard to the correspondence of the insane, in custody, as in its judgment will promote their interests, and it shall be the duty of the proper authorities of each asylum or institution, public or private, in which the insane are in custody, to comply with and enforce said rules and regulations.

§ 23. No person or association shall establish or keep an asylum or institution for the care, custody, or treatment of the insane, or persons of unsound mind, for compensation or hire, without first obtaining a license therefor from the State Commission in Lunacy; provided that this section shall not apply to any State asylum or institution, or any asylum or institution established or conducted by any county; and provided also, that it shall not apply to cases where an insane person or persons of unsound mind is detained and treated at his own house or that of some relative.

§ 24. Every application for such license shall be accompanied by a plan of the premises proposed to be occupied, describing the capacities of the

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buildings for the uses intended, the extent and location of grounds appurtenant thereto, and the number of patients of either sex proposed to be received therein; and it shall not be lawful for said commission to grant any such license without first having caused an examination, by one of its number, of the premises proposed to be licensed, and being satisfied by such examination that they are as described and are otherwise fit and suitable for the purposes for which they are designed to be used.

§ 25. The State Commission in Lunacy is hereby authorized to hear and determine all applications which may be made to it in writing, by the county superintendents of the poor of the several counties of this State, for exemption from the operation of the tenth section of the act entitled "An act to authorize the establishment of a State asylum for the chronic insane, and for the better care of the insane poor," to be known as "The Willard Asylum for the Insane," passed April eighth, one thousand eight hundred and sixty-five. And whenever said commission on such application shall determine that the buildings of said county and means employed to take care of the chronic pauper insane of such county are sufficient and proper for the time being for such purpose, and shall file the same in the office of the clerk of the county making such application, then and in that case, and until such determination shall be revoked as hereinafter mentioned and provided, the county superintendents of the poor of such county shall be relieved from sending the chronic pauper insane of such county to the Willard Asylum for the Insane as now provided by law. Said commission may at any time revoke such determination, but revocation must be made in writing and filed in the county clerk's office of the county making application in the first instance and notice thereof shall be given in writing to the county superintendents of the poor of such county, and upon the filing of the same the said county superintendents of the poor shall, from thenceforward, be again subject to the provisions and operations of the said act.

§ 26. All powers and duties conferred upon the State Commissioner in Lunacy by chapter five hundred and seventy-one laws of one thousand eight hundred and seventy-three, or by chapter four hundred and forty-six, titles nine and ten, of the laws of one thousand eight hundred and seventy-four, or chapter forty-seven, of the laws of one thousand eight hundred and seventy-eight, or acts amendatory thereof, are hereby transferred to and conferred upon the State Commission in Lunacy created by this act, and the office of State Commissioner in Lunacy is hereby abolished; provided, however, that the present State Commissioner in Lunacy shall for the portion of his term unexpired be an additional member of the State Commission in Lunacy hereby created, with such compensation as is now provided by law and as he has received; and provided further, that he shall have during such unexpired term, such powers and duties only as may be prescribed by the commission created by this act; and during the continuance in office of the present State Commisioner in Lunacy, the said commission shall consist of four members.

§ 27. The chairman of the commission shall notify the Governor of the quarterly and annual meetings of the commissioners and shall invite him to be present.

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§ 28. The terms "commission," as used in this act, shall mean "State Commission in Lunacy;" "commissioners" shall mean "State Commissioners in Lunacy;" "asylum" shall mean any buildings or building, or part of building for the insane erected, established or set apart for such purpose, either by the State, or by any county, or by any corporation; "institution" shall mean any buildings, home or retreat, licensed in accordance with the laws of the State, to have the care, treatment, and custody of the insane.

§ 29. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

§ 30. The sum of fifteen thousand dollars is hereby appropriated to carry out the provisions of this act.

§ 31. This act shall take effect immediately.

NOTE.—The commissioners appointed under this act are: Carlos F. McDonald, M.D., Goodwin Bunn, and Henry A. Reeves.

NOTE.—Besides these laws there are several Acts which have passed both houses of the Legislature, but at the time of this printing (just after Legislature has adjourned) have not been signed by the Governor. One of these is "An Act regulating the commitment, custody, and discharge of the Insane," which specifies in detail how the insane may be committed and on what grounds; another is "An Act to provide for the preliminary education of Medical Students," this examination being conducted under the authority of the Board of Regents, and to apply to all not having a baccalaureate degree who may hereafter commence the study of medicine; two other acts respectively amend acts regulating the practice of dentistry and veterinary medicine.

Chapter 8 of the Laws of 1889 amends the Penal Code, making it a misdemeanor to maintain a place where opium is smoked, or sold or given away for that purpose, or to resort to such a place for the purpose of smoking opium.

Chapter 46 prohibits the use of labels on articles for sale, which are intended to give a false description of the kind, number, place, or measure of the article, or any part of it, or of the country where it was manufactured.

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INDEX.

ABBE, ROBERT, contribution to the surgery of the spinal cord, 204
remarks on subcoracoid dislocation of the humerus, 310
Acoustics of the human chest in physical diagnosis, 126
Address, anniversary, 45
inaugural, 11
Albany county medical society, 409
Allegany county medical society, 411
Alopecia areata, a clinical study on, 184
Amendment to By-Laws, 36
Amblyopia, diabetic, 120
Anniversary address, 45
Annual meeting, minutes of the, 11-38
Appendix, 487
Auditing committee, report of, 36

BACON, GORHAM, treatment of acute inflammation of the middle ear, 237
Bartow, Bernard, remarks on tuberculous disease of the knee, 273
Baruch, Simon, remarks on the summer diarrhœa of infants, 119
the treatment of typhoid fever, 90
Basedow's disease, 106
Beach, Eugene, diseases of the circulatory system occurring in connection with typhoid fever, 87
Bell, A. N., remarks on the etiology of croupous pneumonia, 78
remarks on the treatment of typhoid fever, 103
Biographical sketch of Harvey Jewett, 374
Blindness in New York State, 260
Brief consideration of the present surgical treatment of non-strangulated hernia, 276
Broome county medical society, 412
Bruce, C. E., remarks on the treatment of typhoid fever, 102
Bulkley, L. Duncan, a clinical study on alopecia areata and its treatment, 184
Burt, Stephen Smith, views on the prevention and treatment of typhoid fever, 80
By-Laws, amendment to, 36

CARDIAC dilatation, rules for the management of, 171
Cattaraugus county medical society, 413

Digitized by Google

Cayuga county medical society, 414
Cerebral hemiplegia, infantile, 324
tumors, surgery of, 214
Chautauqua county medical society, 415
Chemung county medical society, 415
Chenango county medical society, 416
Chronic headaches of functional origin, 197
Circulatory system, diseases of the, 87
Clinical study on alopecia areata and its treatment, 184
Clinton county medical society, 417
Columbia county medical society, 418
Committee on hygiene, report of the, 350
on legislation, report of, 15
on nominations, report of, 33, 34
on president's inaugural address, report of, 31
on revision of U. S. Pharmacopœia, 16
on the causes and prevention of blindness, report of the, 354
Communication from medical society of Jefferson county, 27
Considerations concerning extraction of hard cataract, 249
Contribution to the surgery of cerebral tumors, 214
to the surgery of the spinal cord, 204
Corning, J. Leonard, limitations of the influence of the mind upon the body, 340
Cortland county medical society, 419
County medical societies, delegates from the, 383
County medical societies, list of officers and members.
Albany county, 409
Allegany county, 411
Broome county, 412
Cattaraugus county, 413
Cayuga county, 414
Chautauqua county, 415
Chemung county, 415
Chenango county 416
Clinton county, 417
Columbia county, 418
Cortland county, 419
Delaware county, 420
Dutchess county, 420
Erie county, 422
Essex county, 425
Franklin county, 425
Fulton county, 426
Genesee county, 427
Greene county, 427
Hamilton county, 428
Herkimer county, 428
Jefferson county, 429

Digitized by Google

County medical societies:
Kings county, 430
Lewis county, 435
Livingston county, 436
Madison county, 436
Monroe county, 437
Montgomery county, 439
New York county, 440
New York Academy of Medicine, 452
Niagara county, 459
Oneida county, 460
Onondaga county, 462
Ontario county, 464
Orange county, 464
Orleans county, 465
Oswego county, 466
Otsego county, 467
Putnam county, 468
Queens county, 468
Rensselaer county, 469
Richmond county, 470
Rockland county, 471
St. Lawrence county, 471
Saratoga county, 473
Schenectady county, 473
Schoharie county, 474
Schuyler county, 475
Seneca county, 475
Steuben county, 476
Suffolk county, 477
Sullivan county, 477
Tioga county, 478
Tompkins county, 479
Ulster county, 479
Warren county, 480
Washington county, 481
Wayne county, 482
Westchester county, 482
Wyoming county, 485
Yates county, 485
Creveling, J. P., excision of the joints of both elbows, 266
remarks on the treatment of non-strangulated hernia, 282
Crothers, T. D., inebriety from a medical point of view, 193
Croupous pneumonia, the etiology of, 53
Currier, Andrew F., the disorders of menstruation, 154
remarks on the technique of vaginal hysterectomy, 146

Digitized by Google

DANA, CHARLES L., chronic headaches of functional origin, 197
remarks on Basedow's disease, 110
remarks on the surgery of the spinal cord, 211
table of nerve distribution, 213
Deceased honorary doctors of medicine, list of, 405
honorary members, list of, 403
permanent members, list of, 396
De Garmo, W. B., a brief consideration of the present surgical treatment of non-strangulated hernia, 276
Delaware county medical society, 420
Delegates from the county medical societies, 383
Dental neurectomy, inferior, 220
Diabetic amblyopia, 120
Diphtheria, municipal control of, 103
Diseases of the circulatory system occurring in connection with typhoid fever, 87
Disorders of menstruation, 154
Dutchess county medical society, 420

EFFICACY of the older methods of treating nasal disease contrasted with those of to-day 222
Eligible to honorary membership, 394
to permanent membership, 392
Emmet, Thomas Addis, remarks on the technique of vaginal hysterectomy, 145
Erie county medical society, 422
Essex county medical society, 425
Etiology of croupous pneumonia, 53
Excision of the joints of both elbows, 266
External auditory canal, hyperostoses of the, 241
Extraction of hard cataract, considerations concerning, 249

FISHER, E. D., cranial measurements in twenty cases of infantile cerebral hemiplegia, 324
Ford, Willis E., galvanism in gynecology, 148
remarks on infantile cerebral hemiplegia, 336
Fowler, George B., hernia of the pleura into the neck, 112
Franklin county medical society, 425
Fulton county medical society, 426

GALVANISM in gynecology, 148
Genesee county medical society, 427
Gibney, V. P., remarks on management of hip-joint disease, 322
the orthopedic treatment of tubercular disease of the knee in children, 267
Glass, J. H., inferior dental neurectomy, 220

Digitized by Google

Goff, I. N., remarks on the treatment of typhoid fever, 103
Greene county medical society, 427
Gynecology, galvanism in, 148

HAILES, WILLIAM, case of triple cast of the larynx and trachea down to the bifurcation, 338
remarks on the etiology of croupous pneumonia, 78
remarks on the treatment of non-strangulated hernia, 282
Hamilton county medical society, 428
Hard cataract, extraction of, 249
Headaches, chronic, 197
Herkimer county medical society, 428
Hernia of the pleura into the neck, 112
Hip-joint disease, management of, 310
Holt, L. Emmett, the prevention of summer diarrhœa among infants, 115
Honorary degree of doctor of medicine, 394
members, list of, 391
Hopkins, H. R., Basedow's disease, 106
Howe, Lucien, the purulent conjunctivitis of infants, 260
Human chest in physical diagnosis, acoustics of the, 126
Humerus, subcoracoid dislocation of the, 302
Hunter, James B., the technique of vaginal hysterectomy, 139
Hyperostoses of the external auditory canal, 241
Hypertrophies at the base of the tongue, 234
Hysterectomy, vaginal, the technique of, 139

INAUGURAL address, 11
Inebriety from a medical point of view, 193
Infantile cerebral hemiplegia, 324
Inferior dental neurectomy, 220
Inflammation of the middle ear, 237
Influence of the mind upon the body, 340
In memoriam, 364

JACOBI, A., remarks on Basedow's disease, 111
remarks on infantile cerebral hemiplegia, 337
remarks on the disorders of menstruation, 169, 170
remarks on the rules for management of cardiac dilatation, 180
Jefferson county medical society, 429
communication from, 27

KINGS county medical society, 430
Kocher's method of reducing subcoracoid dislocations of the humerus, 302

LARYNX and trachea, triple cast of, 338
Laws of the State of New York of interest to the medical profession, 487
Leaming, James R., acoustics of the human chest in physical diagnosis, 126
Lewis county medical society, 435
Limitations of the influence of the mind upon the body, 340

Digitized by Google

List of members of the society for 1889, 383
non-resident members, 390
of officers of the society for 1889, 383
of officers of the society from its organization, 381
Loomis, A. L., remarks on the etiology of croupous pneumonia, 75
rules for the management of cardiac dilatation, based on its etiology, 171
Livingston county medical society, 436

MADISON county medical society, 436
Management of cardiac dilatation, rules for the management of, 171
of hip-joint disease from an anatomico-pathological basis, 310
Medical profession, laws of interest to the, 487
society of Jefferson county, communication from, 27
Members in attendance, 7
of the society for, 1889, 383
Membranous rhinitis, 229
Memoir of Frederick Hyde, 365
Menstruation, the disorders of, 154
Merritt H. Cash prize fund, report of the, 41
Middle ear, inflammation of the, 237
Minutes of the annual meeting, 11–38
Monroe county medical society, 437
Montgomery county medical society, 439
Moore, William Oliver, diabetic amblyopia, 120
Municipal control of diphtheria, 103

NASAL disease, treatment of, 222
Nerve distribution, table of, 213
Neurectomy, inferior dental, 220
New York Academy of medicine, 452
county medical society, 440
State, blindness in, 260
laws of interest to the medical profession of, 487
Niagara county medical society, 459
Non-resident members, list of, 390
Non-strangulated hernia, treatment of, 276
Noyes, Henry L., considerations concerning extraction of hard cataract, 249

OBITUARIES, 365
Officers and committees, 5
of the society for 1889, 383
of the society from its organization, 381
Oneida county medical society, 460
Onondaga county medical society, 462
Ontario county medical society, 464
Operative treatment of a case of hyperostoses of the external auditory canal, 241

Digitized by Google

Orange county medical society, 474
Organization, 1
Orleans county medical society, 465
Orthopedic treatment of tubercular disease of the knee in children, 267
Oswego county medical society, 466
Otsego county medical society, 467

PERMANENT members, list of, 385
Perityphlitic abscess, treatment of the so-called, 283
Peterson, Frederick, cranial measurements in twenty cases of infantile cerebral hemiplegia, 324
Pharmacopœia, U. S., committee on revision of, 16
Phelps, A. M., management of hip-joint disease from an anatomico-pathological basis, 310
remarks on tubercular disease of the knee, 273
Phillips, Wendell C., treatment of hypertrophies at the base of the tongue, 234
Pilcher, Lewis S., contribution to the surgery of cerebral tumors, 214
remarks on subcoracoid dislocation of the humerus, 309
remarks on the treatment of non-strangulated hernia, 281
Pneumonia, croupous, the etiology of, 53
Pomeroy, O. D., remarks on hyperostoses of the auditory canal, 248
remarks on membranous rhinitis, 234
Pooley, Thomas R., the operative treatment of a case of hyperostoses of the external auditory canal, 241
Potter, Frank Hamilton, membranous rhinitis, 229
William Warren, remarks on the technique of vaginal hysterectomy, 147
Powers, Charles A., Kocher's method of reducing subcoracoid dislocations of the humerus, 302
Prevention and treatment of typhoid fever, 80
of summer diarrhœa among infants, 115
Prize fund, report of the Merritt H. Cash, 41
Publication committee, report of, 41
fund, 40
Purulent conjunctivitis of infants, 260
Putnam county medical society, 468

QUARANTINE control, report of special committee on, 42
Queens county medical society, 468

RENSSELAER county medical society, 469
Report of committee on prize essay, 14
of committee on nominations, 33, 34
of committee on president's inaugural address, 31
of the auditing committee, 36
of the committee on hygiene, 350
of the committee on legislation, 15

Digitized by Google

Report of the committee on the causes and prevention of blindness, 354
of special committee on quarantine control, 42
of the publication committee, 41
of the Merritt H. Cash prize fund, 41
of treasurer, 39
Resolutions, 14, 16, 22, 24, 25, 29, 34, 35, 36
Retired permanent members, list of, 390
Rhinitis, membranous, 229
Rice, Clarence C., efficacy of older methods of treating nasal disease contrasted with those of to-day, 222
remarks on hyperostoses of the auditory canal, 247
remarks on membranous rhinitis, 233
Richmond county medical society, 470
Ridlon, John, remarks on the management of hip-joint disease, 322
remarks on tubercular disease of the knee, 274
Rockland county medical society, 471
Roe, John O., remarks on a case of triple cast of the larynx and trachea, 340
remarks on membranous rhinitis, 233
Rules for the management of cardiac dilatation, 171
of organization, 1

St. Lawrence county medical society, 471
Saratoga county medical society, 473
Satterthwaite, Thomas E., remarks on the etiology of croupous pneumonia, 76
Schenectady county medical society, 473
Schoharie county medical society, 474
Schuyler county medical society, 475
Seneca county medical society, 475
Sherman, B. F., remarks on the treatment of typhoid fever, 103
Special committee on quarantine control, report of, 42
Spinal cord, contribution to the surgery of the, 204
State of New York, laws of, 487
Sternberg, George M., the etiology of croupous pneumonia, 53
Steuben county medical society, 476
Stoddard, E. V., remarks on the rules for the management of cardiac dilatation, 181
Stover, Charles, the municipal control of diphtheria, 103
Subcoracoid dislocations of the humerus, 302
Suffolk county medical society, 477
Sullivan county medical society, 477
Summer diarrhœa among infants, prevention of, 115
Surgery of cerebral tumors, contribution to the, 214
of the spinal cord, contribution to the, 204

Table of nerve distribution, 213
Technique of vaginal hysterectomy, 139
Tioga county medical society, 478

Digitized by Google

Tompkins county medical society, 479
Tongue, hypertrophies at the base of the, 234
Trachea and larynx, triple cast of, 338
Treasurer's report, 39
Treatment of acute inflammation of the middle ear, 237
of hypertrophies at the base of the tongue, 234
of nasal disease, 222
of non-strangulated hernia, 276
of the so-called perityphlitic abscess, 283
of typhoid fever, 90
Triple cast of larynx and trachea, 338
Tubercular disease of the knee in children, 267
Typhoid fever, diseases of the circulatory system occurring in connection with, 87
fever, treatment of, 90
fever, views on the prevention and treatment of, 80

ULSTER county medical society, 479
United States Pharmacopœia, committee on revision of, 16

VANDER VEER, A., remarks on the treatment of perityphlitic abscess, 300
Vaginal hysterectomy, the technique of, 139
Vergne, De La, C. E., remarks on membranous rhinitis, 234
Views on the prevention and treatment of typhoid fever, 80

WARD, SAMUEL B., anniversary address, 44
Warren county medical society, 480
Washington county medical society, 481
Wayne county medical society, 482
Weir, Robert F., remarks on subcoracoid dislocations of the humerus, 309
treatment of the so-called perityphlitic abscess, 283
Westchester county medical society, 482
Wey, William C., biographical sketch of Harvey Jewett, 374
memoir of Frederick Hyde, 365
Wyoming county medical society, 485

YATES county medical society, 485

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